

TM 9-294

U.S. Dept. of the Army
WAR DEPARTMENT TECHNICAL MANUAL

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2.36-INCH ROCKET LAUNCHERS M9, M9A1, AND M18

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WAR DEPARTMENT

1 MARCH 1946

WAR DEPARTMENT TECHNICAL MANUAL

TM 9-294

This TM supersedes TM 9-294, dated 27 September 1943. It also supersedes TM 9-294 Changes 1, dated 2 June 1944, and Changes 2, dated 26 June 1945.

U.S. Army

2.36-INCH
ROCKET LAUNCHERS
M9, M9A1, AND M18



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WAR DEPARTMENT

Washington 25, D. C., 1 March 1946

TM 9-294, 2.36-inch Rocket Launchers M9, M9A1, and M18, is published for the information and guidance of all concerned.

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Chief of Staff.



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Major General,

The Adjutant General.

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(For explanation of symbols, see FM 21-6.)

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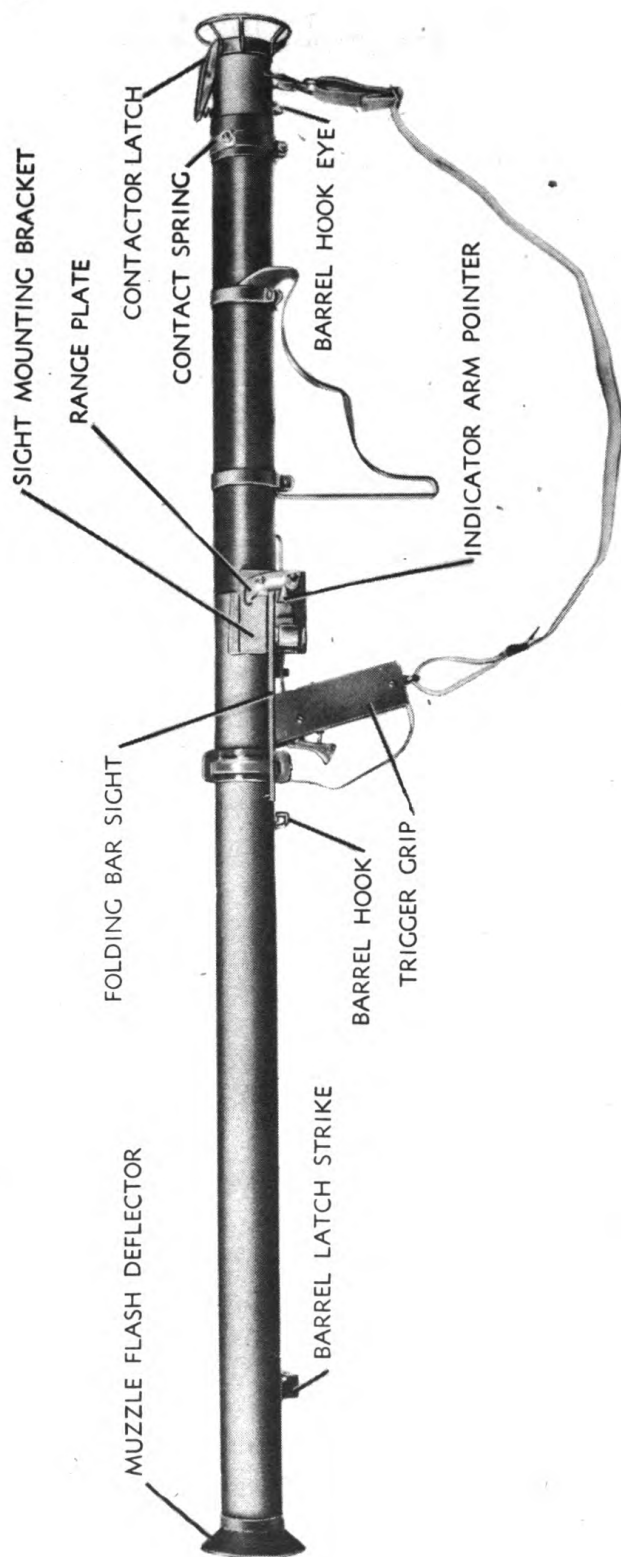
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Figure 1 — 2.36-inch Rocket Launcher M9 With Folding Bar Sight — Left Side View

This TM supersedes TM 9-294, dated 27 September 1943. It also supersedes TM 9-294, Changes 1, dated 2 June 1944, and Changes 2, dated 26 June 1945.

PART ONE — INTRODUCTION

Section I

GENERAL

1. SCOPE.

a. This manual is published for the information of the using arms and services. It also contains information for ordnance maintenance personnel. It contains information required for the identification, maintenance, use, and care of the 2.36-inch rocket launchers M9, M9A1, and M18, and the accessories and ammunition used therewith.

b. In all cases where the nature of repair, modification, or adjustment is beyond the scope or facilities of the unit, the responsible ordnance service should be informed so that trained personnel with suitable tools and equipment may be provided, or proper instructions issued.

2. RECORDS.

a. **Field report of accidents.** When an accident involving ammunition occurs during practice, the incident will be reported as prescribed in AR 750-10 by the ordnance officer under whose supervision the ammunition is maintained or issued. Where practicable, reports covering malfunction of ammunition in combat will be made to the Chief of Ordnance, giving the type of malfunction, type of ammunition, the lot number of the complete rounds or separate-loading components, and conditions under which fired.

b. **Unsatisfactory equipment report.** Suggestions for improvement in design, maintenance, safety, and efficiency of operation prompted by chronic failure or malfunction of the weapon, spare parts, or equipment should be reported on WD AGO Form No. 468, Unsatisfactory Equipment Report, with all pertinent information necessary to initiate corrective action. The report should be forwarded to the Office, Chief of Ordnance, Field Service, Maintenance

2.36-inch Rocket Launchers M9, M9A1, and M18

Division, through command channels in accordance with instruction No. 7 on the form. If WD AGO Form No. 468 is not available, refer to TM 37-250 for list of data on unsatisfactory equipment report. Such suggestions are encouraged in order that other organizations may benefit.

Section II**DESCRIPTION AND DATA****3. DESCRIPTION.****a. General.**

(1) The 2.36-inch rocket launchers M9, M9A1, and M18 (figs. 1 to 4) are electrically operated weapons of the open-tube type. They are fired from the shoulder in the standing, kneeling, sitting, or prone positions. These launchers are two-piece units and are normally carried as such. When assembled, they form a 61-inch launcher for launching 2.36-inch smoke rockets, and high-explosive rockets, against tanks, armored vehicles, pill boxes, and emplacements, and also against personnel.

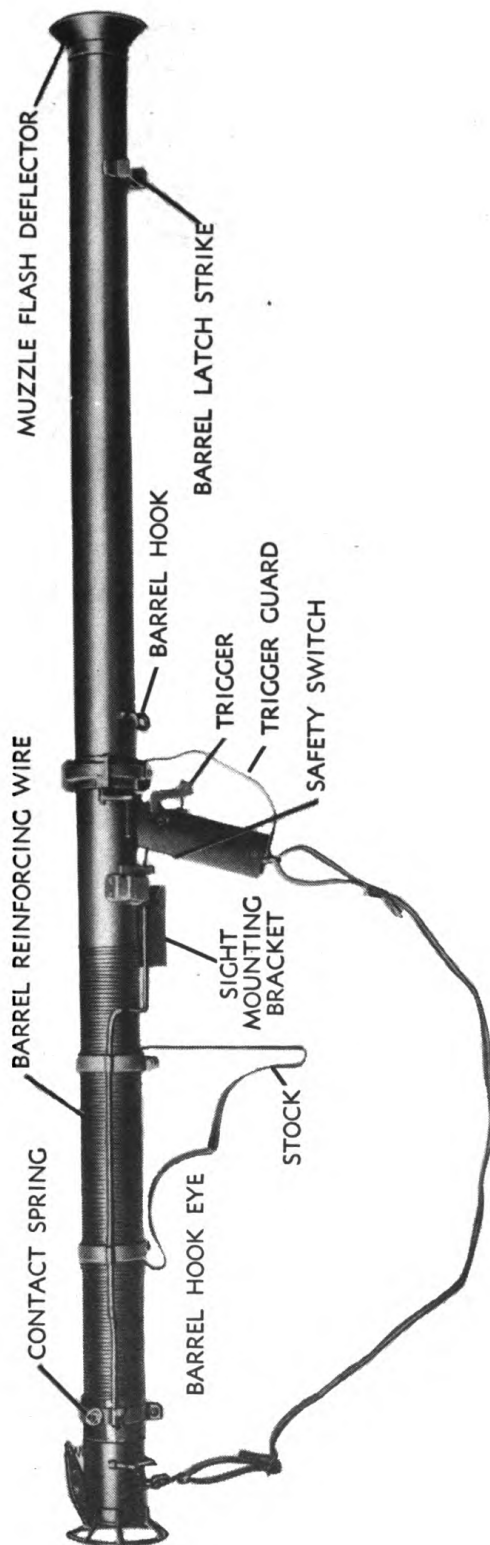
(2) They have a magneto-type firing device in the grip to provide current for igniting the rockets. Each launcher is issued with an optical-type reflecting sight or a horizontal folding bar sight. The gun sling M1 (fig. 4) is issued as an accessory for carrying the launcher.

b. Differences in models.

(1) The launcher M9 (fig. 1) corresponds exactly to the launcher M9A1 (fig. 2) with the exception of a difference in the barrel coupling. The launcher M18 (fig. 3) is made of aluminum alloy and some parts are attached to the tube by screws but, in most respects, it corresponds exactly to the launcher M9A1. The sight bracket (fig. 8), breech guard (fig. 5), and shoulder stock (fig. 3) are of different design from the same components of the launcher M9A1.

(2) The differences in models do not affect troop use or care.

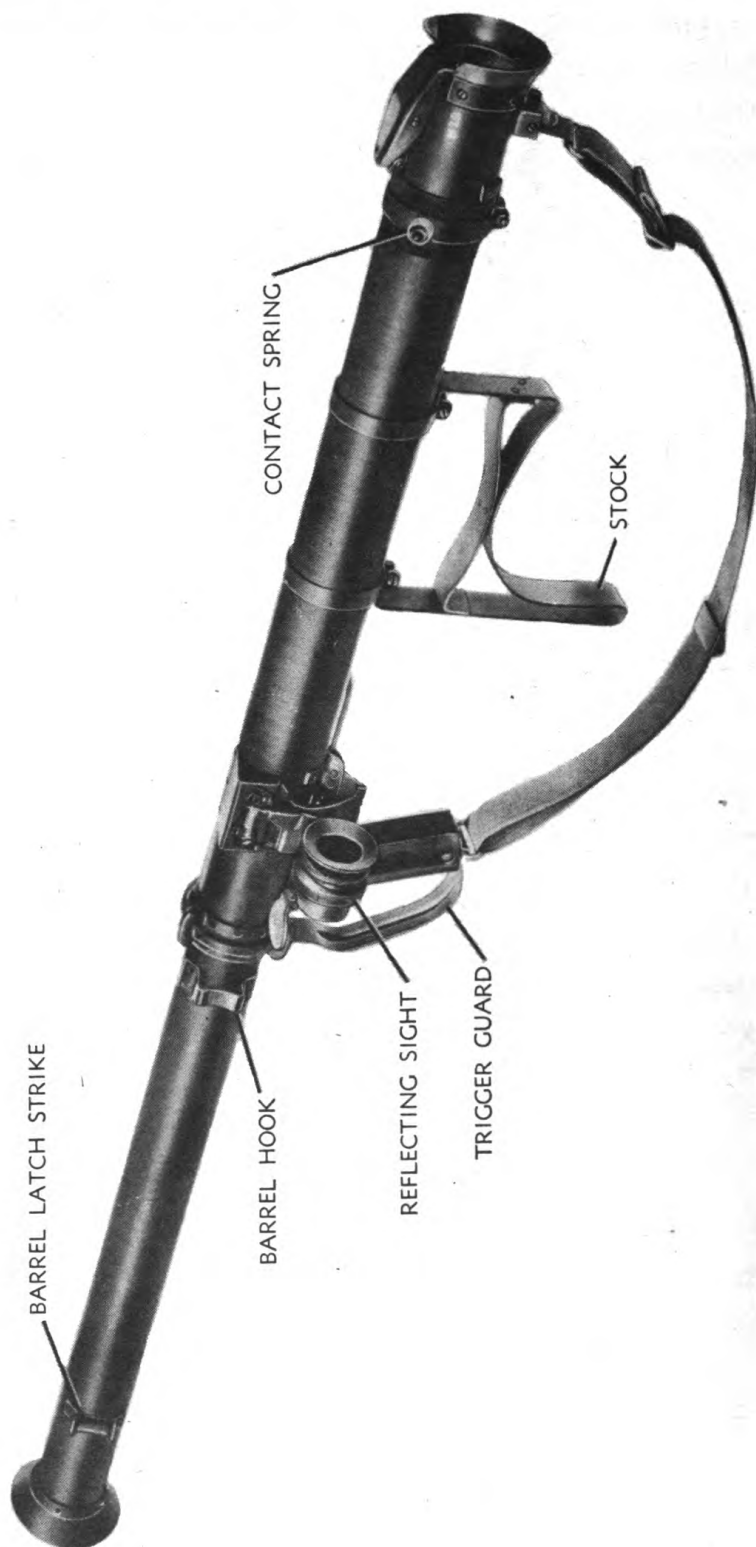
Introduction



RA PD 22629

Figure 2 — 2.36-inch Rocket Launcher M9A1 — Right Side View

2.36-inch Rocket Launchers M9, M9A1, and M18



RA PD 107681

Figure 3 — 2.36-inch Rocket Launcher M18 With Reflecting Sight — Left Side View

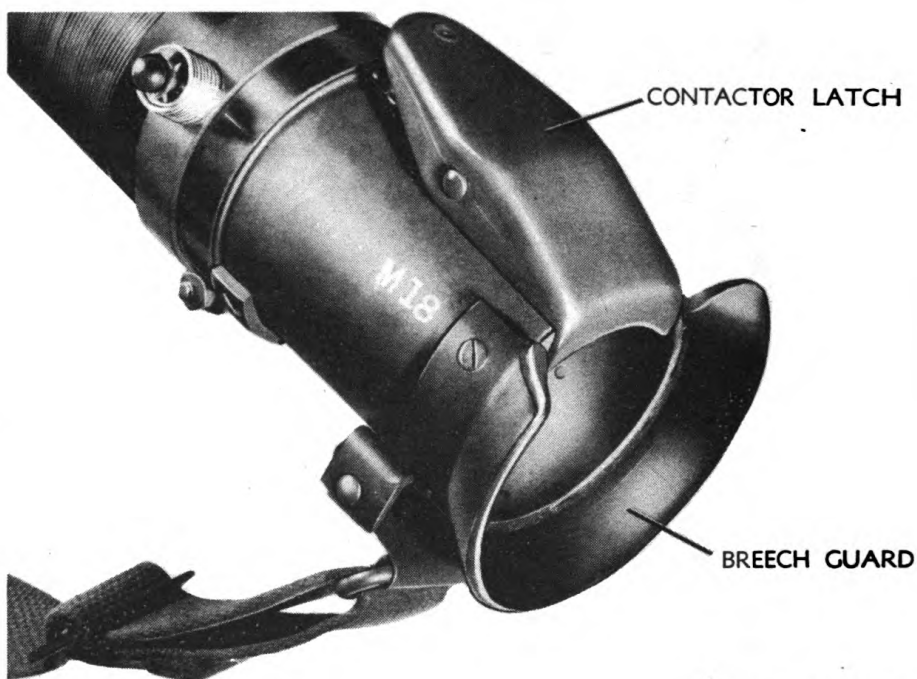
Introduction

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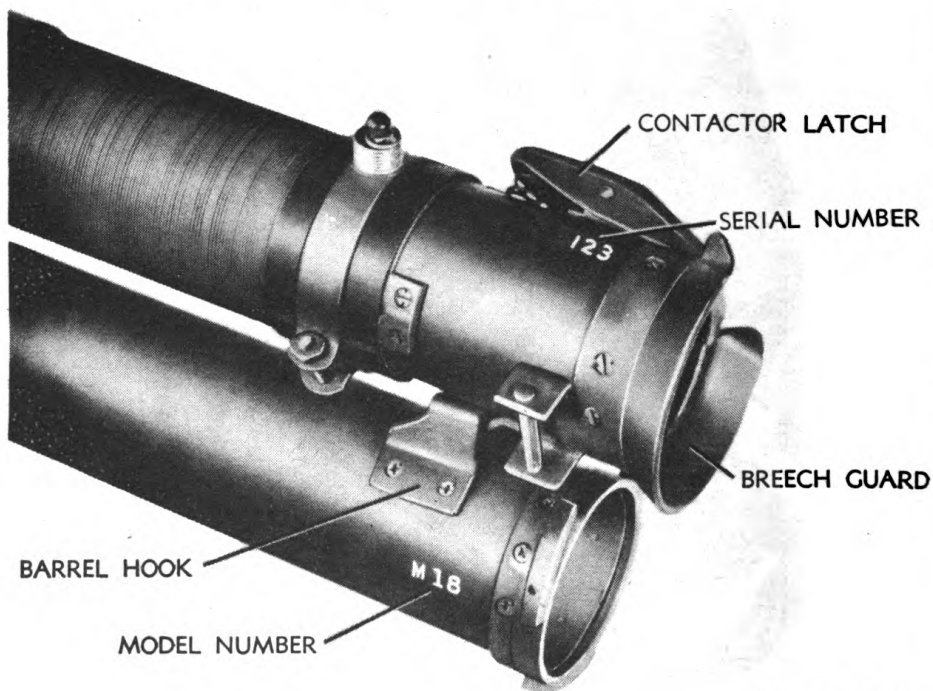
Figure 4 — 2.36-inch Rocket Launcher M18 — Assembled for Carrying

2.36-inch Rocket Launchers M9, M9A1, and M18



RA PD 104609

Figure 5 — Breech Guard M18 Launcher



RA PD 107684

Figure 6 — Model Number — Location of

Introduction

4. IDENTIFICATION INFORMATION. Model numbers are stamped on the rear end of the front barrel, and on the front end of the rear barrel (fig. 6). These launchers carry a serial number at the breech end of the rear barrel.

5. TABULATED DATA.

a. Data pertaining to 2.36-inch rocket launchers M9, M9A1, and M18.

	M9	M9A1	M18
Weight of launcher.....	15.87 lb.	15.87 lb.	10.3 lb.
Over-all length of launcher:			
Assembled for firing.....	61 in.	61 in.	61 in.
Assembled for carrying.....	31.5 in.	31.5 in.	31.5 in.
Rate of fire (approx).....	10 rounds per minute	10 rounds per minute	10 rounds per minute
Type of operation.....	Rocket propulsion	Rocket propulsion	Rocket propulsion
Type of firing mechanism.....	Electric	Electric	Electric
Internal diameter of tube.....	2.37 in.	2.37 in.	2.37 in.
Material of tube.....	Steel	Steel	Aluminum alloy
Muzzle velocity (dependent on rocket).	265 to 275 fps at 70° F		
Cooling	Air	Air	Air

2.36-inch Rocket Launchers M9, M9A1, and M18

PART TWO — OPERATING INSTRUCTIONS

Section III**GENERAL**

6. SCOPE. Part two contains information for the guidance of the personnel responsible for the operation of this equipment. It contains information on the operation of the equipment, with the description and location of the controls.

Section IV**SERVICE UPON RECEIPT OF EQUIPMENT****7. GENERAL.**

a. Upon receipt of new or used materiel, it is the responsibility of the officer in charge to ascertain whether it is complete and in sound operating condition. A record should be made of any missing parts and of any malfunctions. Any such conditions should be corrected as quickly as possible.

b. Attention should be given to small and minor parts as these are the more likely to become lost and may seriously affect the proper functioning of the materiel.

c. The materiel should be cleaned and prepared for service in accordance with the instructions given in paragraph 8.

8. NEW AND USED EQUIPMENT.

a. Assemble the front and rear barrels (par. 11). They should assemble easily and, when assembled, should be positively locked.

b. Clean the bore, using a wooden scraper to remove most of the rust-preventive compound. Then soak a cloth in dry-cleaning solvent

Operating Instructions

and run it through the barrel several times. When thoroughly clean, dry the bore of the barrel and apply a film of oil as prescribed in section X.

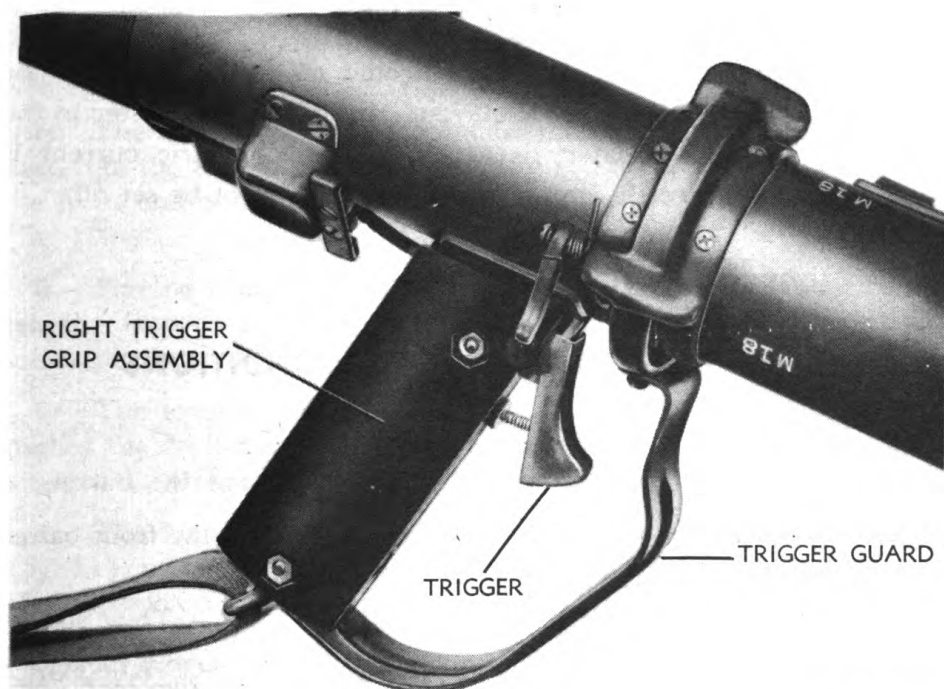
c. Examine launchers for general appearance. If paint has deteriorated or become damaged, leaving exposed portions of bare metal, the materiel should be repainted (par. 38 g).

Section V

CONTROLS

9. TRIGGER. The trigger is located in the front of the trigger grip (fig. 7). It is a lever which, when depressed or released, actuates the magneto in the pistol grip and generates current to ignite the rocket.

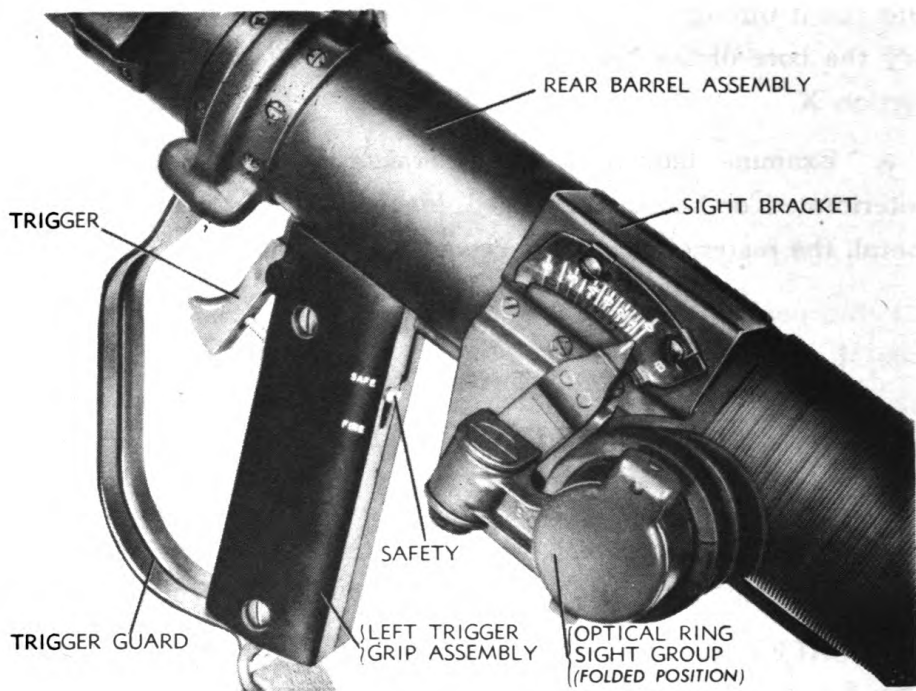
10. SAFETY. The safety is located in the rear of the left grip (fig. 8) and operates vertically when manually pushed. It has two



RA PD 103056

Figure 7 — Trigger — Location of

2.36-inch Rocket Launchers M9, M9A1, and M18



RA PD 103057

Figure 8 — Safety — Location of

positions "SAFE" and "FIRE" as indicated on the grip. When the safety is at "FIRE," the electric current can flow to the igniter in the rocket, but when the safety is at "SAFE," the electric current is shunted, and the electric igniter in the rocket will not be set off.

Section VI

OPERATION UNDER USUAL CONDITIONS

11. ASSEMBLING.

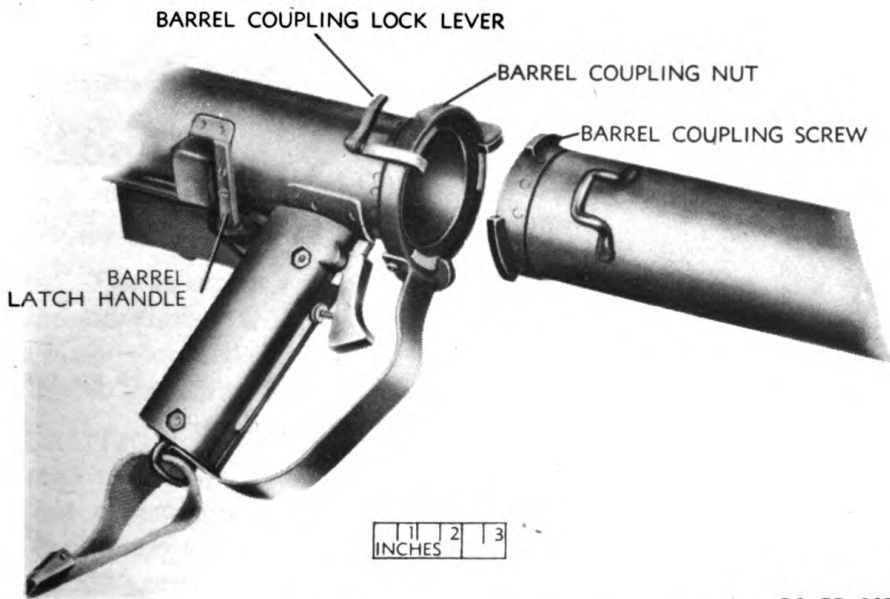
- a. Release the barrel latch handle and disengage the barrels.
- b. Raise the barrel coupling lock lever and screw the front barrel into the rear barrel (fig. 9). Release lock lever.

12. LOADING.

NOTE: *Normal operation of the launcher requires two men—one to load and unload the rockets, and one for firing.*

- a. Prior to loading, make sure the bore is clean.

Operating Instructions



RA PD 107679

Figure 9 — Method of Locking Barrels for Firing

b. The firer places the launcher on his right shoulder *after making certain that the safety is in the "SAFE" position* and aims at the target.

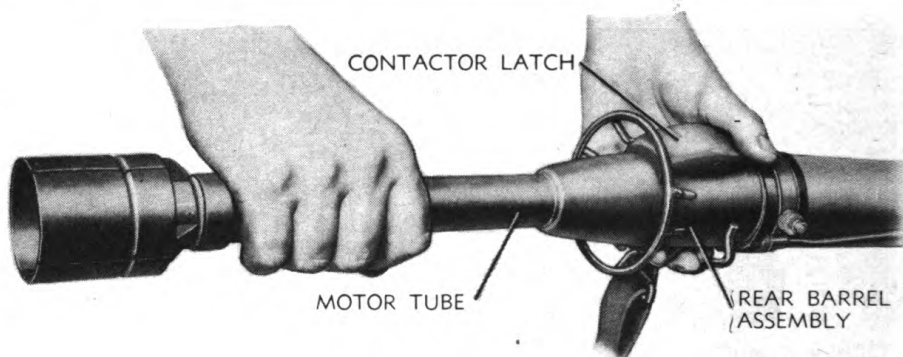
c. The loader grasps the rocket by the motor tube and inserts the head into the rear of the launcher barrel, at the same time depressing the front end of the contactor latch to clear the way for the rocket (fig. 10).

d. Having inserted the head of the rocket into the launcher barrel, the loader then releases the contactor latch and removes the safety pin from the rocket.

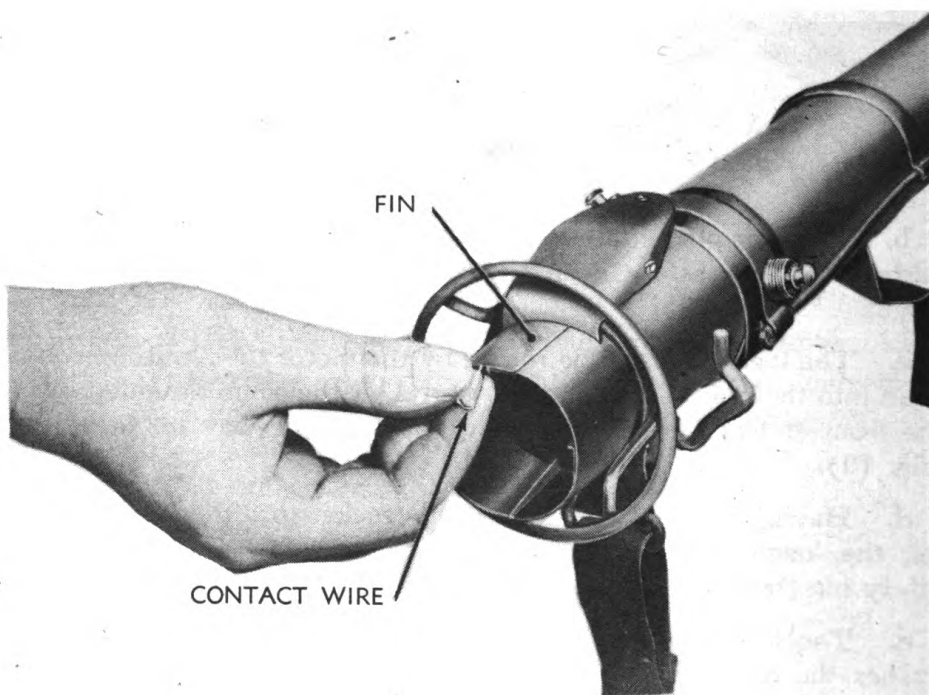
e. The loader again depresses the contactor latch and carefully pushes the rocket into the launcher barrel until the contactor latch engages a notch on the fin assembly.

f. The loader then pulls the end of the contact wire off the fin (fig. 11), pulls the wire straight back to uncoil it, and then engages the uninsulated portion of the wire in any of the coils of either of the contact springs (fig. 12). The launcher is now ready to be fired. **CAUTION:** *During the operation of loading, sighting, and firing, the loader should at no time stand directly behind the launcher. He should stand alongside the back portion of the launcher so as to be out of the way of the blast created by the propulsion of the rocket.*

2.36-inch Rocket Launchers M9, M9A1, and M18



RA PD 107686

Figure 10 — Loading Rocket Into Launcher

RA PD 107687

Figure 11 — Removing Contact Wire From Pin

13. SIGHTING. The launchers M9 and M9A1 may be equipped with a folding bar sight or a reflecting sight. The launcher M18 is equipped with a reflecting sight similar to that used on the launchers M9 and M9A1 with the addition of an eye guard (sec. XVII).

Operating Instructions

14. FIRING.

a. To fire the rocket, the firer moves the safety to the "FIRE" position and squeezes the trigger. If the rocket does not fire when the trigger is squeezed, it may be fired by releasing the trigger. If it is desired to place the launcher on "SAFE", push the safety up to the "SAFE" position. **CAUTION:** *When firing the launcher, squeeze the trigger and release it immediately; do not move the launcher off the target before releasing the trigger.*

b. The launcher can be fired in the standing, kneeling, sitting, or prone positions. **CAUTION:** *When firing from the prone position, the body should be at an angle of at least 45 degrees to the direction of fire so as to avoid injury from the back blast of the rocket.*

CAUTION: *When firing the launcher it is essential that no personnel or inflammable material be directly behind the launcher within a distance of 25 yards. The danger zone is designated as a triangular area with a base and height of 25 yards, the apex being at the breech of the launcher and its height an extension of the launcher axis (fig. 13).*

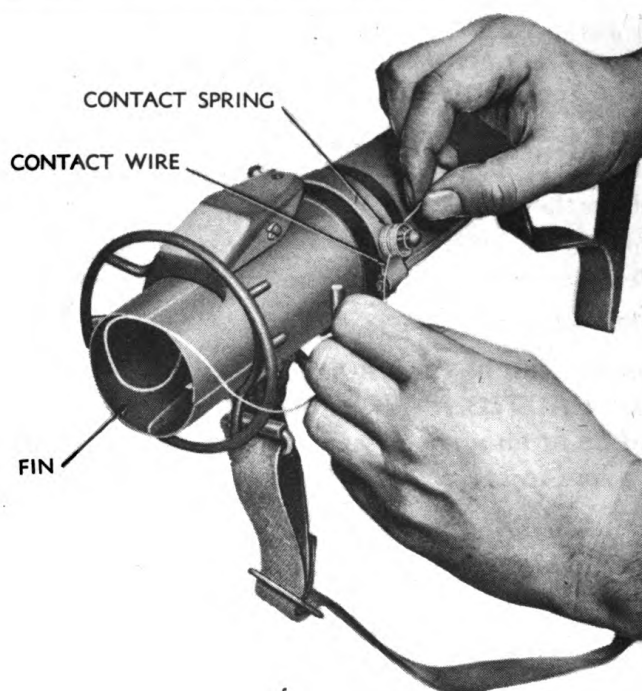
c. Care should be exercised when firing through brush and trees, since impact with a twig or branch may deflect or detonate the rocket.

15. UNLOADING. To unload the launcher, the firer puts the safety on "SAFE," then the loader removes the wire from the contact spring, depresses the contactor latch, and carefully withdraws rocket until safety pin can be reinserted. No attempt will be made to replace the bore-riding pin in a fuze. If the bore-riding pin has been ejected prematurely, the safety pin should be replaced if it is possible to do this *without forcing*. The round is then comparatively safe to handle. If the safety pin cannot be replaced without forcing, no attempt should be made to force it; the rocket should be handled, nose up, with extreme care and destroyed as soon as practicable. Again depress contactor latch to clear the rocket head, and remove rocket completely from launcher. If the safety pin was replaced, the loader then coils and places the contact wire inside the fin assembly and repacks the rocket. **CAUTION:** *Before unloading the launcher, place the safety at "SAFE."*

16. CORRECTION OF MALFUNCTIONS BY IMMEDIATE ACTION.

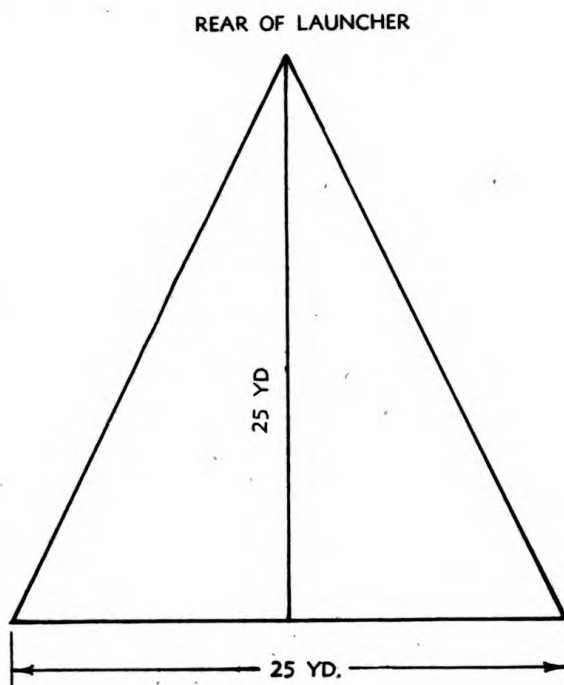
a. **Definition.** Immediate action is the immediate application of a remedy to fire the launcher if it malfunctions while firing in actual or simulated combat.

2.36-inch Rocket Launchers M9, M9A1, and M18



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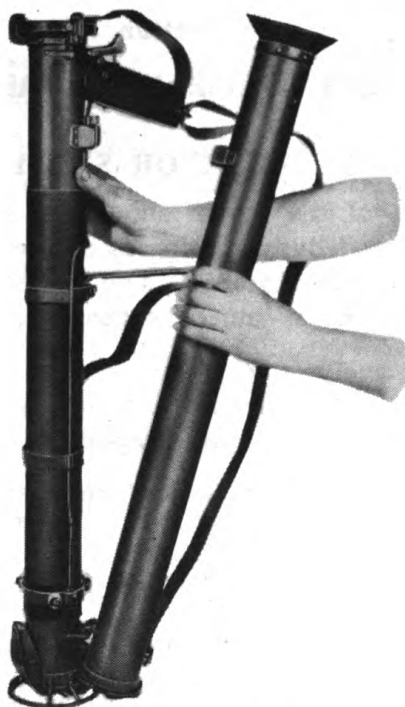
Figure 12 — Engaging Contact Wire in Contact Spring



RA PD 65212

Figure 13 — Danger Zone to Rear of 2.36-inch Rocket Launchers

Operating Instructions



RA PD 22638

Figure 14 — Assembling the Barrels for Carrying

h. Misfire. When a misfire occurs, perform the immediate action described below.

(1) Check to make sure that the safety is in the "FIRE" position.

(2) Squeeze the trigger again to fire the rocket.

(3) If the rocket still does not fire, then the loader cautiously makes certain that the uninsulated portion of the contact wire engages the contact spring. The firer then squeezes the trigger to fire the rocket.

(4) If the rocket still does not fire, the loader waits 15 seconds and then removes the rocket from the launcher as outlined in paragraph 15. After the rocket is removed, it will be repacked and put aside for disposal by authorized personnel.

17. PREPARATION FOR CARRYING. To prepare the launcher for carrying, release the barrel coupling lock and unscrew front barrel. Engage the barrel hook and eye, and press the barrels together (fig. 14) until the barrel latch snaps into position in the latch strike.

Section VII**OPERATION UNDER UNUSUAL CONDITIONS****18. EXCESSIVELY MOIST OR SALTY ATMOSPHERE.**

a. The bore of the barrel should be kept oiled and all parts should be inspected daily for traces of the formation of rust (refer to section X for lubrication). The materiel should be kept covered with tarpaulins as much as possible.

b. In excessively salty atmosphere, the oil used should be changed often, as the salt has a tendency to emulsify the oil and destroy its corrosion-preventive qualities.

c. Launchers should be checked frequently for chipped or cracked paint.

d. Oil firing mechanism (par. 27 d (2)).

19. EXCESSIVELY SANDY OR DUSTY CONDITIONS.

a. If considerable sand or dust is present when the launcher is operated, the lubricant should be removed from the external non-operating metal parts, and these parts should remain dry until the action is over.

b. Keep launchers covered with tarpaulins as much as possible.

c. Launchers should be cleaned frequently, as sand or dust, and lubricant, act as an abrasive.

20. COLD CLIMATES.

a. Preparing a launcher for cold climate consists of inspecting and placing it in good mechanical condition and lubricating sparingly.

b. The launcher should be inspected to see that all moving parts operate freely and without binding.

c. In cold climates it is essential that all moving parts be kept absolutely free of moisture.

d. Clean and protect unpainted surfaces with a thin film of oil.

e. When launchers are in the open, cover with tarpaulins or other suitable material if possible.

f. When launcher is transferred from the outside into a heated building, wipe dry with clean cloths, and clean and oil metal parts immediately, to prevent condensation of moisture.

g. Before lubricating, the launcher should be thoroughly cleaned.

Operating Instructions

21. HOT CLIMATES.

- a. In hot climates, inspect and clean the launcher as frequently as required, rather than at fixed intervals.
- b. When humidity is high, clean and oil as soon as possible after firing, when the launcher gets wet or dirty, or if there is any reason to expect corrosion to start.
- c. Oil firing mechanism (par. 27 d (2)).

Section VIII**DEMOLITION TO PREVENT ENEMY USE****22. GENERAL.**

a. The destruction of the materiel when subject to capture or abandonment in the combat zone will be undertaken by the using arm only on authority delegated by the division or higher commander as a command function, when such action is deemed necessary as a final resort to keep the materiel from reaching enemy hands.

b. Adequate destruction of materiel means damaging it in such a way that the enemy cannot restore it to usable condition in the combat zone either by repair or cannibalization. Adequate destruction requires that:

- (1) Enough parts essential to the operation of the materiel must be damaged.
- (2) Parts must be damaged beyond repair in the combat zone.
- (3) The same parts must be destroyed on all materiel, so that the enemy cannot make up one operating unit by assembling parts from several partly destroyed units.

23. PROCEDURE FOR DEMOLITION. Remove front barrel from rear barrel. Lay rear barrel on the ground with one end resting on a rock, log, or any other suitable object to hold the barrel, if possible, at an angle. Using front barrel as a sledge, thoroughly deform rear barrel and contact studs. Break firing mechanism located in grip. Thoroughly smash sight.

2.36-inch Rocket Launchers M9, M9A1, and M18

PART THREE — MAINTENANCE INSTRUCTIONS

Section IX**GENERAL**

24. SCOPE. Part three contains information for the guidance of the personnel of the using organizations responsible for the maintenance (first and second echelons) of this equipment, as well as for ordnance personnel. It contains information needed for the performance of the scheduled lubrication and preventive maintenance services, as well as a description of the major systems and units, and their functions.

25. CLEANING AND PRESERVING MATERIALS. The following cleaners and preservatives are required for use with this materiel. (See TM 9-850 for information additional to that contained in this manual on the use of these materials.)

CLOTH, wiping

CLEANER, rifle bore

SOLVENT, dry cleaning

CLOTH, abrasive, aluminum oxide,
grade 5/0—180 (fine)
grade 3/0—120 (medium)

CLOTH, crocus

OIL, lubricating, preservative (medium)

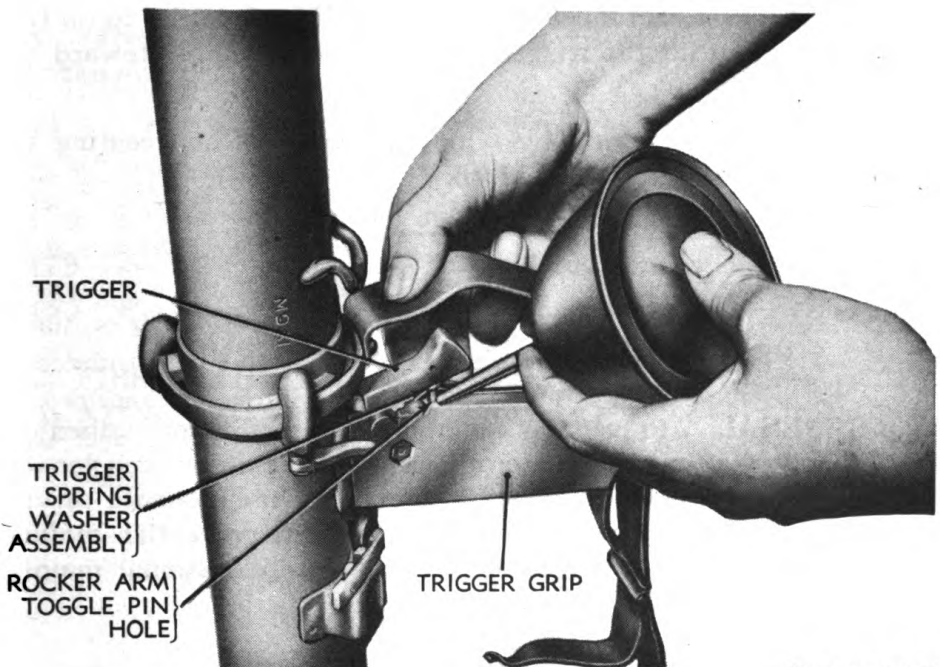
OIL, lubricating, preservative (special)

COMPOUND, rust preventive (light)

PAPER, flint, grades 2/0, 1 and 2

Section X**LUBRICATION****26. GENERAL LUBRICATION INSTRUCTIONS.**

a. Lubricate the launcher with preservative lubricating oil (special) at all temperatures, except under conditions of extreme moisture or salt spray, when preservative lubricating oil (medium) will be used, provided prevailing temperatures are in excess of +32° F.

Maintenance Instructions

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Figure 15 – Lubricating Electrical Firing Mechanism

b. Lubrication should be accomplished carefully and sparingly. Excess oil should be wiped off. This is particularly important with regard to the barrel.

c. Excess oil attracts grit and foreign matter which will cause rapid wear of the moving parts.

d. Unless otherwise specified, use rifle-bore cleaner or dry-cleaning solvent to clean or wash all metal parts whenever partial or total disassembly is undertaken, or when removing the protective lubricant film on exposed metal surfaces. Gasoline will not be used. Dry all parts thoroughly before lubricating.

27. POINTS TO BE LUBRICATED.

a. Under normal conditions all bearing surfaces of moving parts should be lightly lubricated. This is best accomplished with an oiled cloth.

b. Bore. Clean and lubricate after firing and weekly (par. 38).

c. Contractor latch pin. Lubricate weekly.

d. Electrical firing mechanism.

2.36-inch Rocket Launchers M9, M9A1, and M18

(1) Lubricate weekly by injecting approximately 10 drops of oil through the rocker arm toggle pin hole (fig. 15). In order to do this, it is necessary to lift the trigger spring washer assembly toward the trigger.

(2) Lubricate monthly by removing the grips and coating the entire mechanism with a film of oil.

Section XI**PREVENTIVE MAINTENANCE SERVICE**

28. GENERAL. Preventive maintenance services prescribed by Army Regulations are a function of using organizations' echelons of maintenance. This section contains preventive maintenance service allocated to crew (first echelon), and scheduled preventive maintenance service allocated to (second echelon) organizational maintenance.

29. OPERATIONAL INSPECTION.

a. Inspect the launcher for general condition, loose or broken components, painting defects, bends, and dents, or for obstructions in the bore.

b. Check for any broken or loose wire connections.

c. Check for corroded electric contact points.

d. Examine the contact springs to see that they are secure to the clamp and that they are clean and free from rust, paint, and grease.

30. COMMON PREVENTIVE MAINTENANCE PROCEDURES.

a. The following general preventive maintenance will be observed in addition to that referred to in the schedules below:

(1) Avoid getting dry-cleaning solvent or lubricants on electric wires, as petroleum products are extremely injurious to rubber.

(2) Rust, dirt, grit, gummed oil, and water cause rapid deterioration of internal mechanisms and outer unpainted surfaces. Particular care should be taken to keep all bearing surfaces properly lubricated. Rust is an enemy of iron and steel. All traces of it should be removed from unpainted surfaces with crocus cloth which is the coarsest abrasive to be used by the using arm for this purpose.

(3) Loose parts will be tightened, broken parts replaced, and paint kept in good condition.

*Maintenance Instructions***31. REPAIRS.**

a. The following operations should be performed by ordnance maintenance personnel only:

- (1) Replace defective firing mechanism (par. 41).
- (2) Remove dents in barrel (par. 38 e).
- (3) Replace stud springs on folding bar sight (par. 52 c).
- (4) Solder all loose or broken soldered connections.
- (5) Replace defective barrel coupling spring or screw (par. 38 c).

32. FIRST ECHELON MAINTENANCE SCHEDULES (OPERATOR OR CREW MAINTENANCE).

POINT	PREVENTIVE MAINTENANCE	DETAILED INSTRUCTIONS
Daily		
Barrel	Examine for rust, scale, and dents.	Pars. 27 and 29 a
Contact springs	Examine to see that they are secure to the clamp, and clean and free from rust, paint, and grease.	Par. 29 d
Before Firing		
Barrel	Wipe clean, removing film of oil.	
Wire connections	Check for looseness.	Par. 29 b
Folding bar sight	Check for ease of folding and of extending it outward.	
Reflecting sight	Check for loose or broken lenses.	
Contactor latch body	Check for corrosion.	
Contact springs	Check for corrosion, paint grease, or dirt.	Par. 29 c
Barrel coupling screw	Check for rust or burs.	Par. 38 c
Barrel coupling nut	Check for rust or burs.	Par. 38 c

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POINT	PREVENTIVE MAINTENANCE	DETAILED INSTRUCTIONS
	After Firing	
Barrel	Clean and oil.	Pars. 27 and 38 a
	Weekly	
Barrel	Clean and oil.	Pars. 27 and 38 a
Contacto latch pin	Oil.	Par. 27 c
Firing mecha- nism	Oil.	Par. 27 d

33. ORGANIZATIONAL (SECOND ECHELON) MAINTENANCE SCHEDULES.

	Before Firing	
Wiring and connections	Check condition.	Par. 29 b
	After Firing	
Wiring and connections	Check condition.	Par. 29 b
All parts	Make record of malfunctions or damages resulting from firing, and correct before next firing.	
	Monthly	
Firing mecha- nism	Remove grips and oil entire mechanism.	Par. 27 d (2)
All parts	Thoroughly inspect condition and repair if necessary.	

Section XII

MALFUNCTIONS AND CORRECTIONS

34. GENERAL. Proper care of the launcher and rockets before, during, and after firing will prevent most malfunctions. Malfunctions which cannot be remedied by immediate action, as outlined in paragraph 16, should be dealt with in accordance with the instructions in paragraph 35.

Maintenance Instructions

35. FAILURE TO FIRE.

- a. Failure to fire is generally caused by defective ammunition or defective firing mechanism.
- b. If the contact wire is loosely connected to the rocket, the rocket may be defective and should be turned over to ordnance personnel.
- c. Remove the trigger grips (par. 40) and check firing mechanism for loose joints or contacts, and for breakage. If any part of firing mechanism is worn or broken, notify ordnance maintenance personnel.

Section XIII**BARREL GROUP****36. GENERAL.**

- a. The launcher has a two-piece open barrel having a smooth bore. The front and rear barrels are joined by means of the barrel coupling screw on the rear end of the front barrel, and the barrel coupling nut on the front end of the rear barrel (fig. 9). The coupling screw and nut contain a single-thread interrupted screw, so arranged that the front barrel is inserted into the rear barrel and turned approximately 60 degrees clockwise until it comes to a stop. A barrel coupling lock, which is located on the front part of the rear barrel, prevents the barrel from loosening.
- b. The barrel hook is located near the back end of the front barrel. It engages the barrel hook eye, located near the back end of the rear barrel, when assembling both barrel sections for carrying. The barrel latch is located just back of the grip. The barrel latch strike is located in back of the muzzle flash deflector. It is engaged by the barrel latch when locking both barrels together for carrying. The muzzle flash deflector is attached to the front barrel at the muzzle end. The function of the deflector is to divert particles of unburned powder which might otherwise strike the firer's face.
- c. A metal stock is clamped around the wired section of the rear barrel. The stock on the launchers M9 and M9A1 has two shoulder seats; the front seat is used for short-range firing, and the rear seat is used for long-range firing and for firing in the prone position. The stock on the launcher M18 has only one shoulder seat (fig. 3).
- d. The contact springs serve as connecting points for the contact wire from the rocket; either spring may be used. The spring-actuated contactor latch assembly serves to engage notches on the tail of the rocket and hold it in position for firing, as well as to act as a ground

2.36-inch Rocket Launchers M9, M9A1, and M18

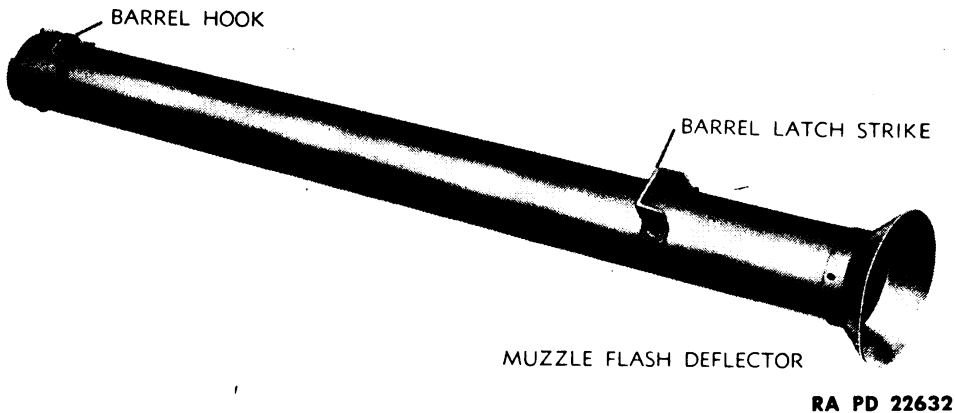


Figure 16 – Front Barrel Assembly

connection to complete the electrical firing circuit. The breech guard facilitates loading of the rocket, protects the contactor latch, and keeps out dirt when the end of the launcher rests on the ground.

37. DISASSEMBLY AND ASSEMBLY.

a. Disassembly.

- (1) Release the barrel coupling lock and unscrew the front barrel from the rear barrel (figs. 16 and 17).
- (2) Disconnect sling from sling swivel on trigger guard and from sling loop on rear end of barrel.
- (3) Unscrew the two screws from barrel latch handle and remove barrel latch bolt with spring (fig. 18).
- (4) Press down on contactor latch body, remove cotter pin from contactor latch pin, and withdraw contactor latch pin. Remove contactor latch spring (fig. 19).
- (5) Remove the two screws and nuts which clamp the stock to the barrel and carefully pry the stock off the barrel.

b. Assembly.

- (1) Replace stock on barrel so that front edge of stock is 3 inches from rear edge of sight mounting bracket. Clamp stock in position by means of the two screws and nuts.
- (2) Place contactor latch spring in position over the stud between the contactor latch shunt and the contactor latch body. Press down on contactor latch body and insert the contactor latch pin; secure it with the cotter pin.
- (3) Replace the barrel latch spring on barrel latch spring pin and slide the bolt into position in the barrel latch frame. Secure the barrel latch handle to the bolt by means of the two screws.

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Figure 17 — Rear Barrel Assembly

- (4) Connect the sling to the swivel and to the loop.
- (5) Screw the front barrel into the rear barrel and secure with the barrel coupling lock.

38. MAINTENANCE.

a. **Bore cleaning and preservation.** The following materials and cleaning and preserving procedures will be used for cleaning the barrel in order of indicated preference. Oils to be applied after cleaning will be the same as prescribed by applicable War Department Lubrication Orders and Technical Manuals for specific temperature ranges.

(1) RIFLE-BORE CLEANER.

(a) After firing, and on two consecutive days thereafter, thoroughly clean the bore with rifle-bore cleaner, making sure that all surfaces are well coated. Do not wipe dry.

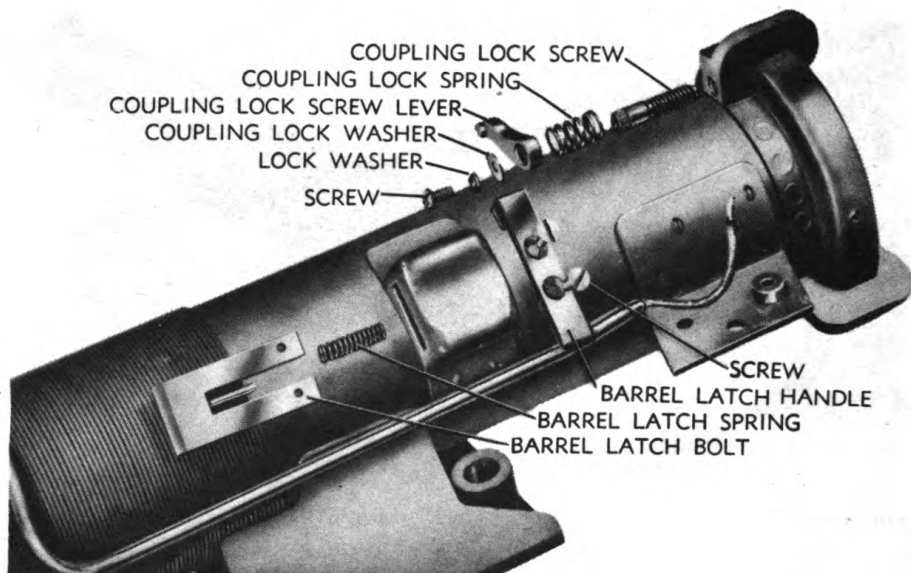
(b) On the third day after firing, clean the bore with rifle-bore cleaner. If the piece will probably be fired within the next 24 hours, do not wipe dry. If the piece will not be fired within the next 24 hours, wipe dry and coat with the oil prescribed in section X.

(c) After the third day since firing, renew the oil film daily. Every fifth day, clean with rifle-bore cleaner, wipe dry, and reoil.

(2) SODA-ASH.

(a) Prepare a solution of one-half pound soda-ash to each gallon of warm water. In temperatures below $+32^{\circ}\text{F}$, if the tube to be cleaned is cold, add the type and amount of antifreeze prescribed in TM 9-850.

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Figure 18 — Barrel Coupling Parts

(b) Immediately after firing and on 3 consecutive days thereafter, thoroughly clean the bore with the soda-ash solution. Rinse with clear warm water and wipe dry. Coat with the prescribed oil.

(c) When the piece is not being fired, renew the oil film daily. Every fifth day, clean the bore with dry-cleaning solvent or rifle-bore cleaner, if available. Wipe dry and reoil.

(3) SOAP.

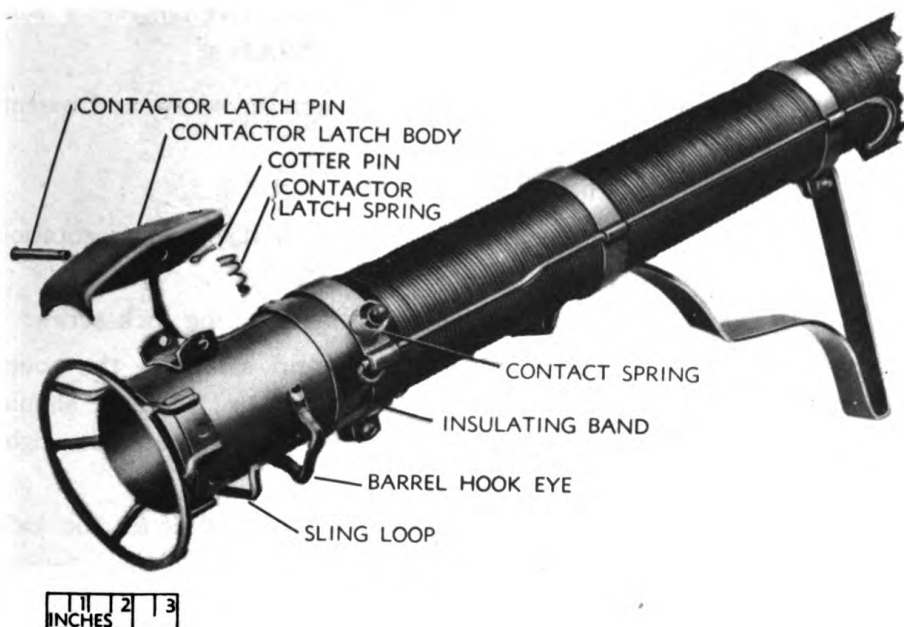
(a) Use castile soap or issue soap.

(b) Prepare a sponging solution by shaving 1 pound of soap into 4 gallons of water. If possible, warm the water to facilitate dissolving the soap. In temperatures below $+32^{\circ}\text{F}$, if the tube to be cleaned is cold, add the type and amount of antifreeze prescribed in TM 9-850.

(c) Follow the same cleaning, drying, and oiling procedure prescribed for the soda-ash solution. **CAUTION:** *When issue soap is used, the bore must be thoroughly rinsed after cleaning, as the soap may contain free caustic which will cause corrosion if it is not completely removed.*

(4) HOT WATER.

(a) As a temporary measure after firing, the bore may be cleaned while still hot by swabbing with quantities of hot water. This method will be used only when rifle-bore cleaner, soda-ash, or soap is not

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Figure 19 — Contactor Latch Parts

available. Extreme care must be taken to thoroughly dry the bore after cleaning with hot water. A coating of oil will be applied immediately thereafter to prevent rusting.

(b) Swabbing with hot water may not remove all of the primer salts or powder residue. It is most important, therefore, that the bore be cleaned as soon as possible in accordance with steps (1), (2), or (3), above.

b. Inspect the barrel group for general condition, loose or broken components, painting defects, bends, and dents, or for obstructions in the bore.

c. Examine the barrel coupling screw lock and nut for rust or burrs. Check functioning of barrel coupling lock. Check for looseness in the barrel coupling. If the coupling lock fails to lock the barrels, it may be due to a worn or broken coupling spring and/or screw, and should be repaired by ordnance maintenance personnel as follows:

- (1) Remove the screw, lock washer, and coupling lock washer.
- (2) Carefully tap the coupling lock screw lever off the coupling lock screw, taking care not to lose the coupling lock spring.
- (3) Unscrew the coupling lock screw. **NOTE: Coupling lock**

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screw B7311783 for the launcher M9 is not interchangeable with coupling lock screw B7312033 for launcher M9A1.

(4) Obtain a new coupling lock spring and/or screw and assemble as follows:

(a) Screw the front barrel into the rear barrel.

(b) Screw in the coupling lock screw until it prevents rotation of the front barrel.

(c) Slip the coupling lock spring onto the coupling lock screw.

(d) Compress the coupling lock spring and assemble the coupling lock screw lever on the coupling lock screw. The lever should be in the locked position. The lever should point toward the right trigger grip and touch the barrel.

(e) Secure the coupling lock screw lever by replacing the lock washers and the screw.

d. Tighten all screws and nuts to prevent their becoming loose in service. Remove all rust, clean pitted surfaces, and repaint. **CAUTION:** *Make sure lip on contactor latch which contacts fins of rocket is kept free of paint.*

e. Remove any dents in the barrel by using the tools shown in figures 20 and 21. These tools should be improvised by the ordnance machinist.

(1) Drive the small dent remover (fig. 20) through the barrel. This will increase the diameter of the dented part of the barrel up to 2.187 inches.

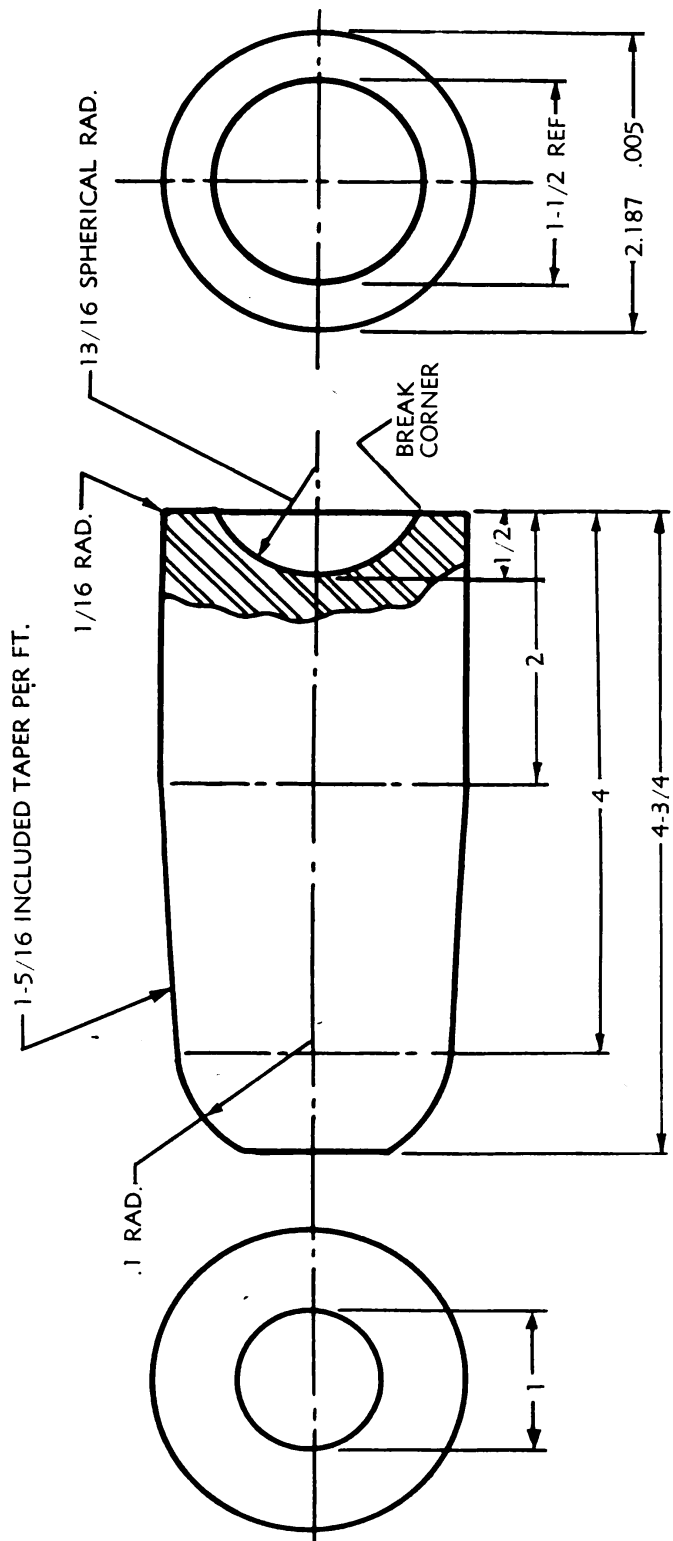
(2) Drive the large dent remover (fig. 21) through the barrel. This will bring the diameter of the dented part of the barrel back to the original 2.369 inches.

(3) To restore the original round contour of the barrel, force the dent remover in place under the dents. Using the dent remover as an anvil, hammer the outside surface of the barrel with a ball peen hammer.

f. If the contactor latch does not function, replace the contactor latch spring.

g. The parts of the launcher from which the paint has been removed by rust, wear, or removal of rust, should be repainted. The purpose of such repainting is to protect the materiel against rusting,

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Figure 20 — Small Dent Remover

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Maintenance Instructions

and to prevent light reflection from worn spots which may have become shiny. *Polished parts, or moving parts where wear occurs and where functioning may be affected by application of paint, will not be painted.* Rust will be removed with crocus cloth and then oiled for protection against further rusting. Painting will be done with the utmost care, and application of paint strictly limited to the damaged area. Care will be observed that no paint penetrates to other parts of the launcher, or that it is not so applied that it may be rubbed off and cause clogging of the firing mechanism.

Section XIV**FIRING MECHANISM**

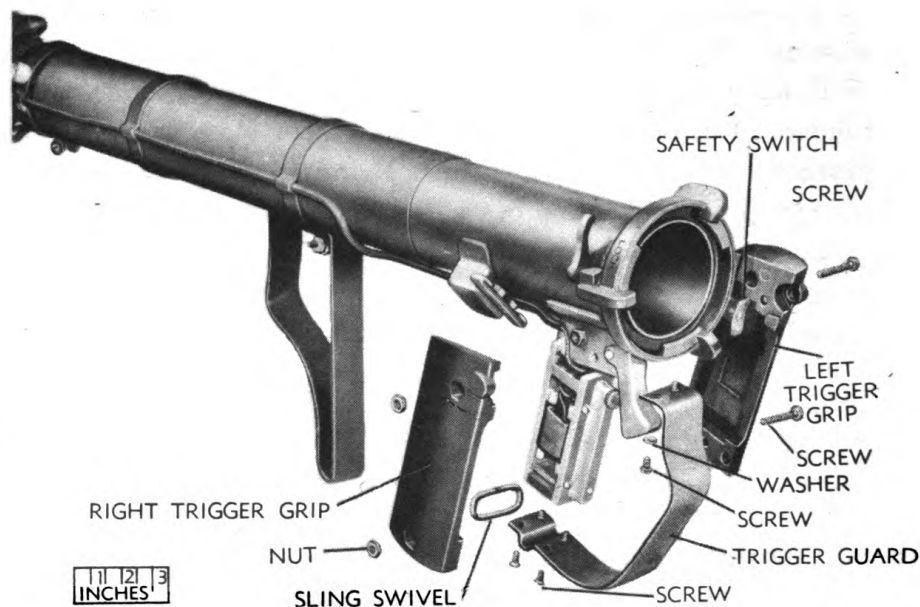
39. GENERAL. The firing mechanism is housed within the trigger grips and is secured to the trigger grip support on the under side of the rear barrel. It consists of a magneto, trigger, and safety mechanism. The magneto consists of several magnets housing a coil of wire which in turn houses a steel armature. When the trigger is squeezed, the armature moves in the coil and generates sufficient current to ignite the rocket. The safety switch is located in the rear side of the left grip. When the safety switch is manually moved to the "SAFE" position, the coil is shorted out of the electric system so that no current reaches the rocket. The magneto generates current when the trigger is squeezed and also when it is released.

40. DISASSEMBLY AND ASSEMBLY.

a. Disassembly (fig. 22). Unscrew all six screws which hold the trigger guard. Unscrew the two screws and nuts which hold the grips together and remove the grips, taking care not to lose the safety switch. Remove safety switch. **NOTE:** *Under no circumstances should the firing mechanism screws, which hold the front and rear firing mechanism plates together, be loosened or removed. Loosening or removing these screws will cause the magnets to lose their magnetic charge and, as a result, the firing mechanism will not function.* **CAUTION:** *Further disassembly of firing mechanism is prohibited.*

b. Assembly (fig. 22). Replace the safety in the left trigger grip so that the round detent on the safety is downward. Replace grips on firing mechanism and secure by means of the two screws and nuts

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Figure 22 — Firing Mechanism

(the longer screw in the bottom hole on grip). **CAUTION:** Care must be taken to prevent the lead wires from getting between the grips and the firing mechanism. Damage to the insulation may cause a short circuit resulting in malfunction. Replace trigger guard and sling swivel and secure with the screws.

41. MAINTENANCE.

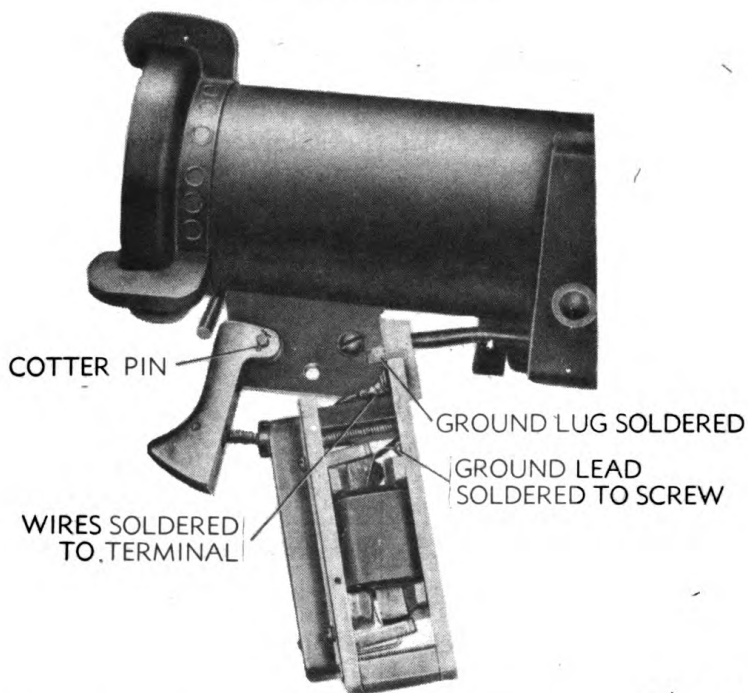
NOTE: The following instructions pertaining to the firing mechanism must be performed by ordnance maintenance personnel.

a. If any part of the firing mechanism (figs. 23 and 24) has become worn or broken so that the launcher does not fire, the firing mechanism will be replaced as a unit. **CAUTION:** Disassembly of the electrical firing mechanism is prohibited because this action decreases the magnetic power of the magnets. Tests have shown that disassembly decreases the output of the magneto from 30 to 40 per cent.

b. To replace a firing mechanism, proceed as follows:

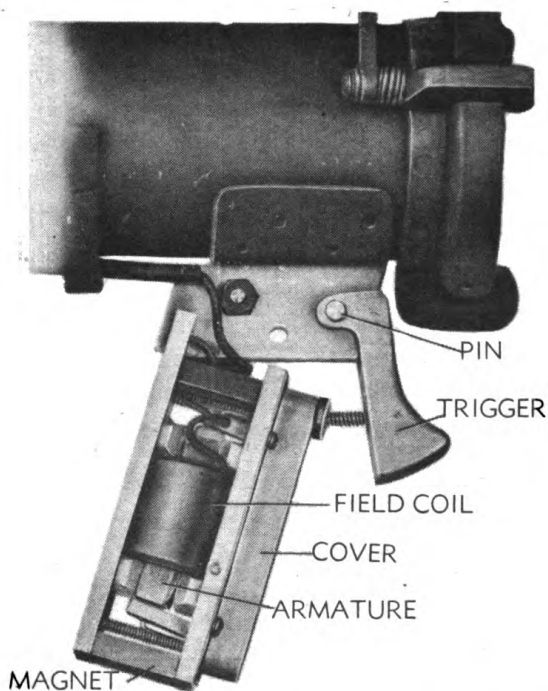
(1) Remove trigger grips (par. 40 a). **CAUTION:** With grips removed from the electrical firing mechanism, the magnetic field tends

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**Figure 23 — Firing Mechanism — Left Side View
With Trigger Grips Removed**



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**Figure 24 — Firing Mechanism — Right Side View
With Trigger Grips Removed**

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to pick up metal particles. Work space, therefore, should be kept as clean as possible.

(2) Heat and disconnect the soldered joints between the wires and terminal, and between ground lug and trigger grip support.

(3) Remove cotter pin and pin which hold trigger to the trigger grip support. Remove the nut and screw which secure the rear plate bracket to the trigger grip support. Remove firing mechanism from launcher.

(4) Assemble new firing mechanism as follows:

(a) Connect the trigger to the trigger grip support by means of the pin and cotter pin.

(b) Connect the rear plate bracket by means of the screw and nut.

(c) Solder all connections.

(d) Oil the firing mechanism (par. 27).

(e) Assemble the trigger grips (par. 40 b).

PART FOUR — AUXILIARY EQUIPMENT

Section XV

GENERAL

42. SCOPE. Part four contains information pertaining to the ammunition and the operation, functioning, and preventive maintenance of sighting equipment used in conjunction with the basic weapon.

Section XVI

AMMUNITION

43. DESCRIPTION.

a. General. Rocket ammunition for 2.36-inch launchers is issued in the form of fixed complete rounds which are ready for loading on removal from the packing.

b. Types. Rockets of this caliber are classified as high-explosive antitank (HE,AT), chemical (gas and smoke), and practice. The HE,AT rocket is loaded with a shaped charge of high explosive for penetration of armored targets. The chemical rocket contains a charge of chemical agent (cyanogen chloride in the gas rocket and phosphorus in the smoke rocket) and a small explosive burster to scatter the charge on impact. The practice rocket contains a propelling charge similar to the service rockets, but is otherwise inert. The effect produced by these types is described in paragraph 46.

c. Components.

(1) The complete round (fig. 25) consists of loaded head, fuze, motor, and fin assembly.

(2) The head is a streamlined, thin-walled, metal container with nose rounded and base threaded for assembly of the fuze and motor.

(3) The fuze M401 is a simple inertia type which functions on impact with nondelay action. The firing pin is prevented from moving toward the detonator by the pin of a safety clamp and a bore-riding pin. The safety clamp is removed when loading the rocket into launcher. The bore-riding pin is released by set-back when the rocket is fired but is held in place by the wall of the launcher until the rocket leaves the muzzle. When the safety clamp and bore-riding pin are removed, the fuze is armed and is extremely sensitive. A blow

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on the nose of the rocket equivalent to a drop of 5 inches on a hard surface will cause the armed fuze to detonate the rocket. The fuze M400 is similar to the M401 in action.

(4) An integral fuze is used in rocket M6A3, all modifications. This consists of a weighted firing pin restrained only by the pin of the waterproof safety clamp. This fuze is armed on withdrawal of the safety pin, and is extremely sensitive in this condition. This fuze is identified by the absence of the bore-riding pin. For additional identification, rockets containing this fuze have a 1/2-inch white band painted on the ogive. An earlier modification used in rocket M6A3 has, between the firing pin and the detonator, a thin metal detonator cover which reduces its sensitivity to impact.

CAUTION: *If the bore-riding pin should be missing, or should be ejected on removal of the safety clamp, the rocket should not be fired. The safety pin should be replaced and fastened and the rocket set aside for destruction. If the safety pin cannot be replaced without forcing, the rocket should be handled, nose up, with extreme care, until it can be destroyed.*

(5) The motor consists of a steel tube with the front end brazed to the base of the fuze and the rear end constricted by a nozzle. The nozzle is sealed by a plastic cup. The motor contains the propelling charge and an electric igniter. The lead wires of the igniter pass out through the plastic cup which closes the nozzle. One wire is soldered to the fin; the other is stripped of insulation at the end for connection to the launcher contacts, and is coiled and taped to the fin. The propelling charge consists of a quantity of special powder adjusted for each lot of powder to give the standard velocity without exceeding safe pressures. Since the rate of burning increases with initial temperature, it is extremely important not to fire rockets at temperatures outside those specified as safe for each particular round. Firing at temperatures below the lower limit will give erratic ranges and excessive muzzle blast of powder particles; firing at temperatures above the upper limit will cause dangerous pressures to be built up within the motor.

(6) The fin assembly consists of fin blades welded to the rear of the motor, forming a cylinder which is grooved for engagement of the latch of the launcher.

44. IDENTIFICATION.

a. **General.** In common with other types of ammunition, rockets are identified by means of the painting and marking of the item; positive identification consists of the standard nomenclature of the item and its ammunition lot number.

Auxiliary Equipment

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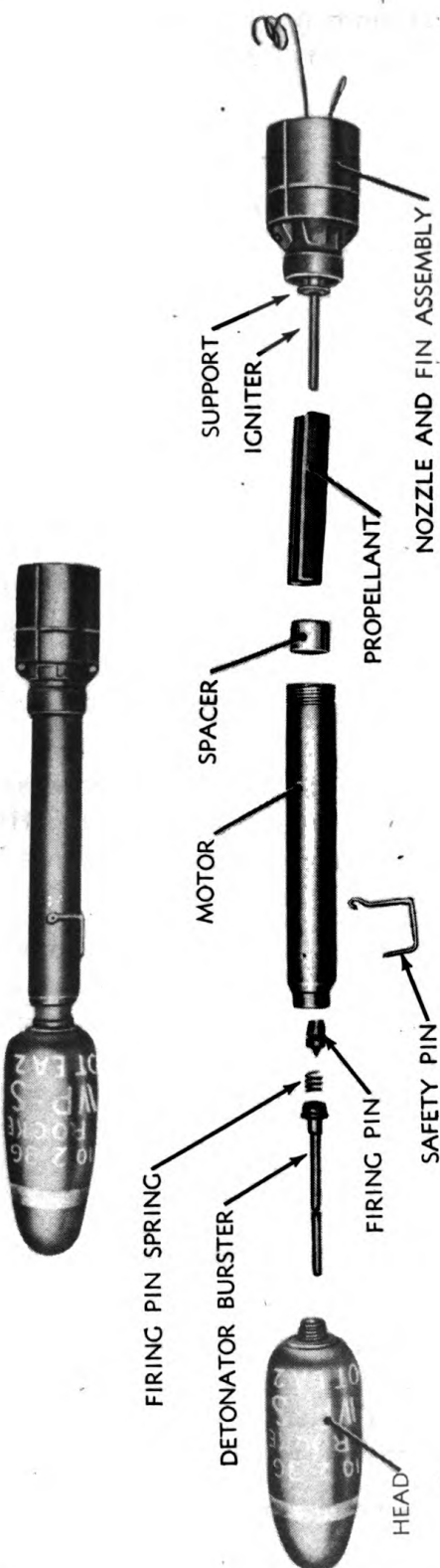


Figure 25 — Complete Round Smoke Rocket M10 — Complete and Disassembled

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h. Painting. Ammunition is painted to prevent rust and to provide by the color a means of identification as to type. Rockets are painted as follows:

(1) **ROCKET HEAD.**

HE,AT.....Olive drab, marking in yellow
 Gas.....Gray, marking and one band, all in green
 Smoke.....Gray, marking and one band, all in yellow
 Practice.....Blue, marking in white

(2) **ROCKET MOTORS.** Motors for all service rounds are painted olive drab. The motors of practice rounds are painted blue.

c. Marking.

(1) Standard markings are stenciled on the rocket in the appropriate color. They include type, size, and model of the item, and the ammunition lot number which consists of the loader's initials or symbol, the loader's lot number, and the date (month and year) of loading. Safe temperature limits are marked on rockets of later manufacture.

(2) Special markings are added whenever there is an important difference from the standard item. For example, the HE,AT rockets M6A3C, M6A3D, and M6A3F are each marked with a 1/2-inch white band to indicate an exceptionally sensitive fuze.

d. Ammunition lot number. A lot of ammunition consists of a number of items, manufactured under uniform conditions from uniform materials, which are expected to function uniformly. The lot number identifies each individual lot of ammunition and is required for all purposes of record making reference to particular items of ammunition.

45. AUTHORIZED ROUNDS.

a. Specific data. Ammunition authorized for use in 2.36-inch launchers and specific data are listed in table I.

b. General data. All models of 2.36-inch rockets are designed to be ballistically interchangeable and, consequently, are similar in weight, velocity, and range. The length varies with the density of the load. General data are listed in table II.

c. Fuze data. Data indicating the sensitivity of the various fuzes are given in table III.

Auxiliary Equipment

TABLE I. AUTHORIZED ROUNDS

NOMENCLATURE	TEMPERATURE LIMITS (degrees Fahrenheit)	PROPELLANT	FUZE
Service Rounds			
ROCKET, HE,AT, 2.36", M6A5	-40° to +120°	M7 (T4)	M401
ROCKET, HE,AT, 2.36", M6A4	-40° to +120°	M7 (T4)	M400
ROCKET, HE,AT, 2.36", M6A3F	-40° to +120°	M7 (T4)	Integral-sensitive
ROCKET, HE,AT, 2.36", M6A3D	-20° to +120°	T1E1 (Salted)	Integral-sensitive
ROCKET, HE,AT, 2.36", M6A3C	0° to +120°	AXS-761	Integral-sensitive
ROCKET, HE,AT, 2.36", M6A3	0° to +120°	AXS-761	Integral
ROCKET, gas, CK, M26 (T73)	-40° to +120°	M7	M401
ROCKET, smoke, WP, 2.36", M10A3	-40° to +120°	M7	M401
ROCKET, smoke, WP, 2.36", M10A2	-40° to +120°	M7	Integral
ROCKET, smoke, WP, 2.36", M10A1	-20° to +120°	T1E1 (Salted)	Integral
ROCKET, smoke, WP, 2.36", M10 (T26E2)	0° to +120°	AXS-761	Integral
Practice Rounds			
ROCKET, practice, 2.36", M7A6	-40° to +120°	M7 (T4)	Inert
ROCKET, practice, 2.36", M7A5	-20° to +120°	T1E1 (Salted)	Inert
ROCKET, practice, 2.36", M7A4	0° to +120°	AXS-761	Inert
ROCKET, practice, 2.36", M7A3	0° to +120°	AXS-761	Dummy
ROCKET, smoke, HC, 2.36", T27E1	0° to +120°	AXS-761	Integral
ROCKET, smoke, HC, 2.36", T27	0° to +120°	AXS-761	Integral

TABLE II. GENERAL DATA

Models	Length (in.)	Weight (lb)	Velocity (max) (70°) ft/sec	Range (max) (yd)
All HE,AT and Practice	19.4	3.4	275	700
Gas, CK, M26	18.6	3.4	275	700
Smoke, HC, T27	18.3	3.4	265	700
Smoke, HC, T27E1	16.1	3.4	275	700
Smoke, WP, T26	19.3	3.4	265	700
All other WP Smoke	17.1	3.4	275	700

TABLE III. FUZE SENSITIVITY

MODEL	INCHES DROP ON HARD SURFACE REQUIRED FOR			
	Drop on Nose		Drop on Pin	
	No armed fuze to fire	All armed fuzes to fire	No fuze to arm	All fuzes to arm
M401	5	9	5	8
M400	8	18	12	18
Integral (M6A3 type)	24	78	—	—
Integral, sensitive (M6A3C type)	14	24	—	—

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46. EFFECT.

a. **HE,AT** rockets have effect against various targets as follows:

(1) **ARMOR PLATE.** Penetration of armor found on most tanks may be expected at all ranges. A hole is blown through the plate and heated particles of metal are sprayed through in a cone-shaped pattern. Any ammunition within this pattern is usually exploded.

(2) **MASONRY.** Penetration of brick and masonry from several inches to a foot or more, depending upon quality of structure, may be expected.

(3) **STRUCTURAL STEEL.** Produces shattering effect against cast steels and such materials as girders and railroad rails. Produces extensive damage, probably irreparable, to motor blocks.

(4) **WOOD.** Penetration of timber from several inches to a foot or more, dependent upon the wood, may be expected.

(5) **SOIL AND VEGETATION.** Rockets with sensitive fuzes will generally detonate on impact with brush or soft ground and on glancing impact with soil at short ranges. Earlier models will not detonate on impact with water or soft mud and will ricochet rather than detonate on glancing impact with normal soil, that is, below 300 yards range. The detonation is similar to that of a 75-mm high-explosive shell.

(6) **FRAGMENTATION.** Fragmentation and antipersonnel effect is slightly greater than that of the 60-mm mortar high-explosive shell.

b. Gas rockets burst on impact and produce concentrations of poison gas which may be dissipated in 10 minutes in the open, but which may persist much longer in sheltered or enclosed spaces.

c. Smoke rockets produce effects as follows:

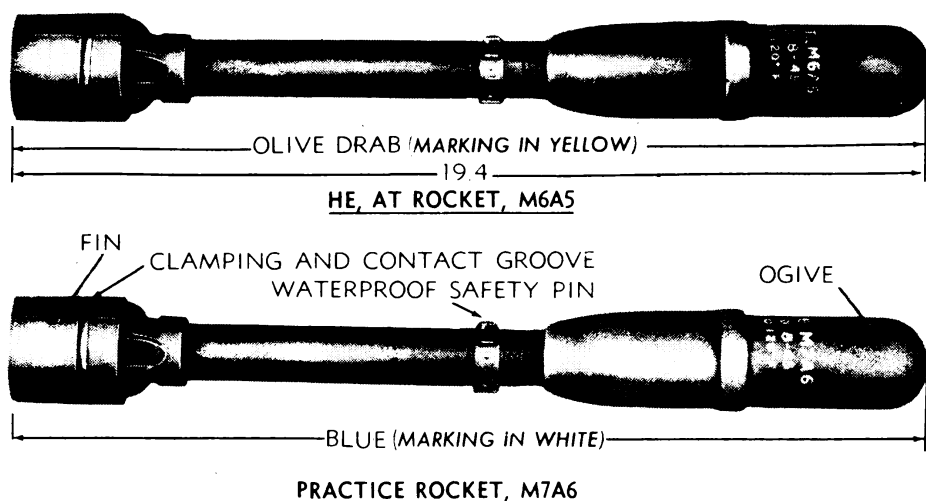
(1) **WP SMOKE.** Phosphorus rockets burst on impact and scatter particles of burning phosphorus over a radius of 10 yards. The burning phosphorus produces a spray of dense white smoke.

(2) **HC SMOKE.** HC smoke rockets ignite on impact and burn (without exploding) for about 1 minute producing a cloud of white smoke.

47. MODELS AND MODIFICATIONS.

a. **HE,AT** rockets. The various modifications of **HE,AT** rockets differ as follows:

(1) **M6A5.** This model (fig. 26) is distinguished by the fuze M401 and the propellant powder M7 (T4). In firing rockets loaded with this propellant, the use of a face mask is unnecessary at temperatures higher than 20° below zero. Safe temperatures range from minus 40° F to plus 120° F.

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Figure 26 — HE,AT Rocket M6A5 and Practice M7A6

(2) **M6A4.** This model (fig. 27) has the fuze M400. It is similar to the M6A5 in appearance except for the markings.

(3) **M6A3F.** This model has a sensitive integral fuze with an earlier-type waterproof safety clamp. This fuze is characterized by the absence of the bore-riding pin. The round is otherwise similar to the M6A4.

(4) **M6A3D.** This model is similar to the M6A3F above except that it uses propellant powder T1E1 (salted powder). The safe temperatures range from minus 20° F to plus 120° F.

(5) **M6A3C.** This round (fig. 27) is similar to the M6A3F except that the propellant AXS-761 is used. The safe temperatures range from 0° F to plus 120° F.

(6) **M6A3.** This model is similar to the M6A3C except that, in the fuze, a thin metal disk is assembled between the firing pin and detonator. This reduces materially the sensitivity of the fuze. Rounds of early manufacture may have the wire safety pin instead of the waterproof safety clamp.

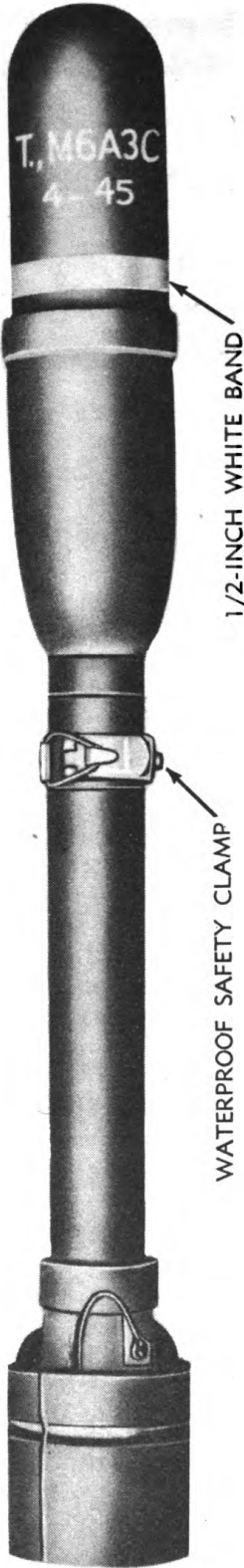
b. Gas rockets. The CK gas rocket M26 has the same fuze and motor assembly as the smoke rocket M10A3.

c. Smoke rockets. The various modifications of smoke rockets differ as follows:

(1) **WP, M10A3.** This model (fig. 28) corresponds to the HE,AT, M6A5. It incorporates the fuze M401, and propellant powder M7 (T4).

(2) **WP, M10A2.** This model corresponds to the HE,AT M6A3F. It incorporates the integral fuze and M7 powder.

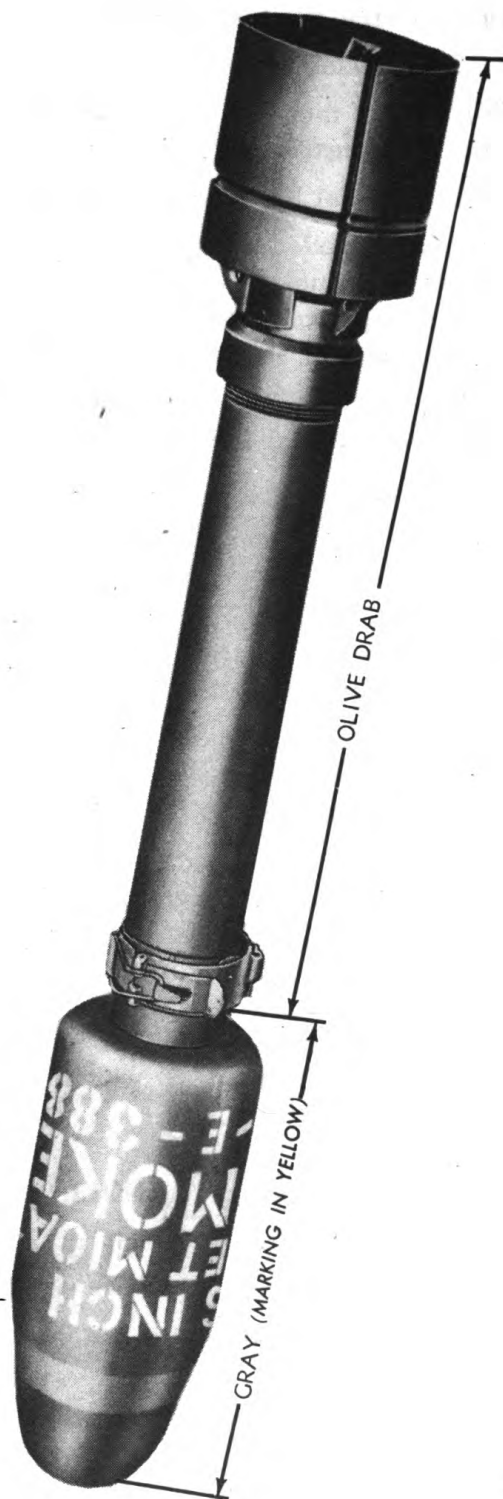
2.36-inch Rocket Launchers M9, M9A1, and M18



RA PD 108214

Figure 27 — HE, AT Rocket M6A3C

Auxiliary Equipment



RA PD 108213

Figure 28 — Smoke Rocket M10A3

2.36-inch Rocket Launchers M9, M9A1, and M18

(3) WP, M10A1. This model corresponds to the HE,AT M6A3D. It incorporates the integral fuze and T1E1 powder.

(4) WP, M10. This model corresponds to the M6A3.

(5) WP, T26E1. This model differs from the M10 only in internal details of burster construction.

(6) WP, T26. This model has a long fin assembly.

(7) HC, T27E1. This model is a burning type, authorized for practice to simulate the WP smoke rocket. It is characterized by a circle of paper-sealed smoke ports in the base of the head. The motor is similar to that used for the M6A3.

(8) HC, T27. This model differs from the T27E1 in having a long fin assembly. It is authorized for practice use.

d. Practice rockets. Practice rockets of current manufacture are made from the metal parts of HE,AT rockets with inert loading of head and fuze. Earlier models were brought up to ballistic weight and balance by a steel bar. The various models differ as follows:

(1) M7A6. This model (fig. 26) is loaded with propellant powder M7 (T4). It simulates the HE,AT rockets M6A3F, M6A4, and M6A5.

(2) M7A5. This model is loaded with propellant powder T1E1. It simulates the HE,AT rocket M6A3D.

(3) M7A4. This model is loaded with propellant powder AXS-761. It simulates the HE,AT rocket M6A3C and M6A3.

(4) M7A3. This model uses the steel bar for weight adjustment. It is otherwise similar to the M7A4.

e. Obsolete models. Obsolete rockets not authorized for firing are all characterized by a long fin assembly which is not enclosed by a cylindrical shroud.

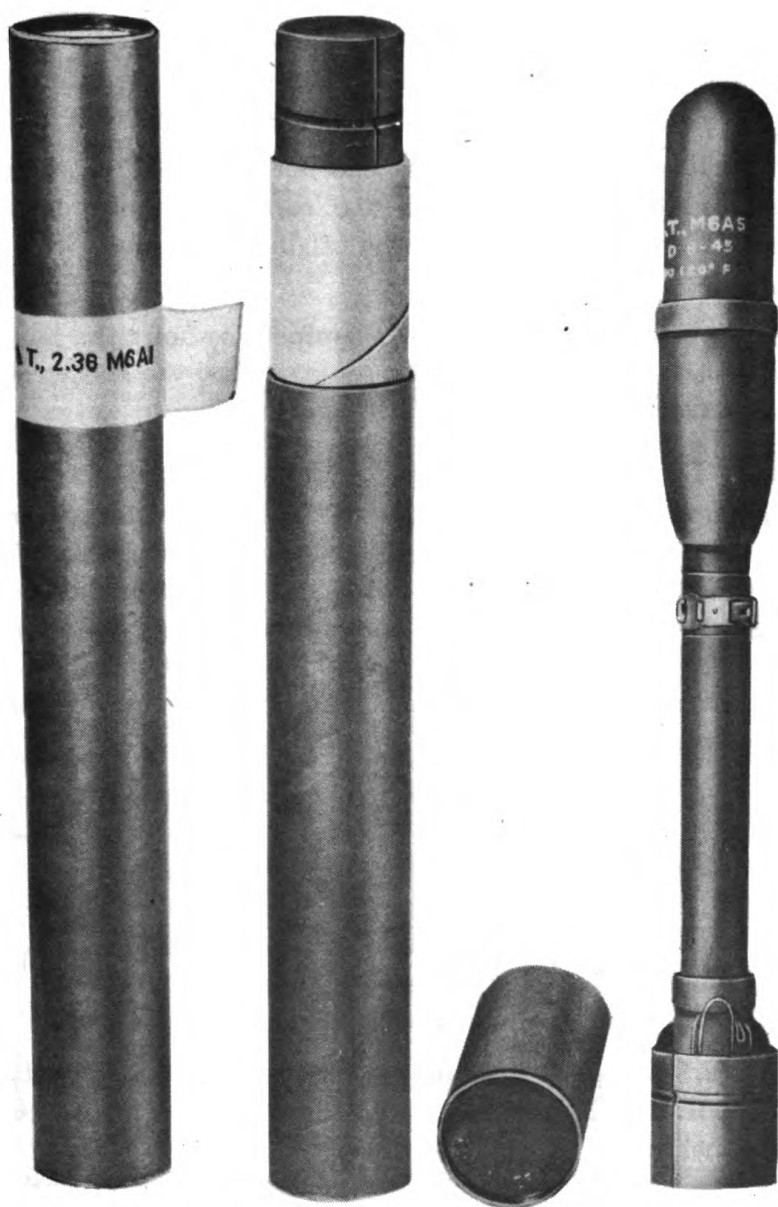
48. CARE AND PRECAUTIONS IN HANDLING.

a. Ammunition is packed to withstand all conditions ordinarily encountered; however, the following should be observed:

(1) Boxes containing ammunition should not be dropped, thrown, tumbled, or dragged.

(2) The waterproof sealing of ammunition containers should not be broken until the ammunition is about to be used. Items unpacked but not used should be restored to their original condition and packings, and resealed.

Auxiliary Equipment



RA PD 108212

Figure 29 — Packings

2.36-inch Rocket Launchers M9, M9A1, and M18

b. Rockets should be protected against moisture and extremes of temperature. They should not be stored where temperatures exceed 120° F and should not be exposed to the direct rays of the sun.

c. In firing rockets, consideration should be given to the blast of flame to the rear. The loader should exercise particular care to stand clear of the blast. Care should be exercised in firing through brush or trees, since impact with a branch or twig will detonate the rocket.

d. Rockets prepared for firing and not fired will have the safety pin replaced before the head of the rocket is removed from the launcher and will be returned to the original container which will be resealed.

e. If a rocket fails to fire and examination shows the launcher is not at fault, the safety pin will be replaced and the rocket set aside for destruction by authorized personnel.

f. Rockets must not be disassembled.

g. No attempt will be made to replace the bore-riding pin in a fuze. If the bore-riding pin has been ejected prematurely, the safety pin should be replaced, if it is possible to do this *without forcing*. The round is then comparatively safe to handle. If the safety pin cannot be replaced without forcing, no attempt should be made to force it, and the rocket should be handled, nose up, with extreme care, and destroyed as soon as practicable.

49. PACKINGS.

a. **Description.** Rockets of this caliber are packed in individual fiber containers (fig. 29) which, in turn, are packed in wooden boxes. Fiber containers are sealed with adhesive tape colored to indicate the type — yellow: HE,AT; gray: smoke; and blue: practice. Boxes contain 8, 10, 12, or 20 rounds in standard or jungle pack.

b. **Data.** Complete packing and shipping data are published in ORD 11 SNL S-9. Representative data, suitable for making estimates are given below.

Item	Packing	Dimensions (in.)	Cube (cu ft)	Weight (lb)
ROCKET, HE,AT, 2.36", M6A3	8/box	23 $\frac{5}{8}$ x 13 $\frac{7}{8}$ x 7 $\frac{3}{8}$	1.4	53
ROCKET, HE,AT, 2.36", M6A3	20/box	18 $\frac{3}{4}$ x 13 $\frac{1}{2}$ x 22 $\frac{7}{8}$	3.4	128
ROCKET, smoke, WP, M10A1	12/box (std)	22 $\frac{5}{8}$ x 15 $\frac{1}{4}$ x 11 $\frac{5}{8}$	2.4	68
ROCKET, smoke, WP, M10A1	12/box (jungle)	22 $\frac{5}{8}$ x 15 $\frac{1}{4}$ x 11 $\frac{5}{8}$	2.4	68

*Auxiliary Equipment***Section XVII****SIGHTING EQUIPMENT**

50. GENERAL. This section contains information on the sighting equipment. It contains instructions for operation, bore sighting, and maintenance.

51. ARRANGEMENT AND USE.

a. The launchers M9 and M9A1 may be equipped with a folding bar sight or reflecting sight. The launcher M18 is equipped with a reflecting sight similar to that used on the launchers M9 and M9A1 with the addition of an eye guard. Instructions for operating are as follows:

(1) **FOLDING BAR SIGHT** (figs. 30 and 31). Estimate the range in yards to the target and set the elevation index to the corresponding position on the range plate. For example: If the range is 400 yards, set elevation index at "4" on range scale. Sight through the peep sight and adjust the elevation of the launcher so that the front sight stud lines up with the target. Lead must be estimated by the firer.

(2) **REFLECTING SIGHT** (figs. 32, 33, and 35). Estimate the range in yards to the target and set the indicator arm on the corresponding position on the range plate. For example: If the range is 400 yards, set elevation index at "4" on range plate. Sight through the reflecting sight and adjust elevation of launcher so that the horizontal line of the sight is on the target. Determine the lead necessary and position the object in the proper ring in the sight. The rings of the reticle (fig. 34) are so spaced as to represent correct angular leads for a target moving across a line of fire at speeds of 10, 20, 30, and 40 miles per hour. For example: if the target is traveling at a speed of 20 miles per hour from left to right, position the target on the intersection of the horizontal line of sight and the second ring to the left of center.

52. MAINTENANCE.

a. **Care in handling sighting instruments.**

(1) The sights are, in general, rugged and suited for the designed purpose. They will not, however, stand rough handling or abuse. Inaccuracy or malfunctioning will result from mistreatment.

(2) The optical unit of the sight is sealed with an atmosphere of nitrogen, and contains a desiccating agent to prevent fogging. Disassembly of optical elements is therefore prohibited, since such disassembly cannot be done without injury to the sight.

(3) Any sight assembly which indicates incorrectly or fails to function properly after the authorized test and adjustments have been made, is to be turned in for replacement by ordnance personnel. To

2.36-inch Rocket Launchers M9, M9A1, and M18



RA PD 22635

Figure 30 – Folding Bar Sight in Extended Position

remove the sight assembly, first loosen the two screws which secure the range plate, and then remove the plate (fig. 36). Unscrew the sight assembly from the bracket.

(4) No painting of sighting equipment by the using arm is permitted.

b. Optical unit.

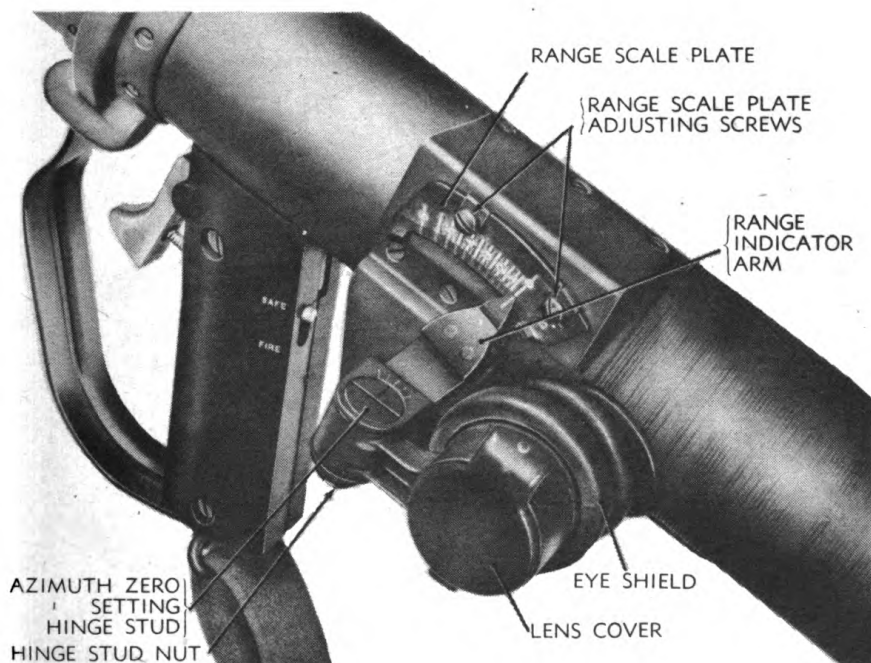
(1) To obtain satisfactory vision, it is necessary that the exposed glass surfaces of the reflecting sight and other parts be kept clean and dry. Corrosion and etching of the surfaces of the glass, which interfere with vision, can be prevented or greatly retarded by keeping the glass clean and dry. Keep the lens cover closed at all times when the sight is not in use.

(2) Under no circumstances should polishing liquids, pastes, or abrasives be used for polishing the glass.

(3) For wiping optical parts, use only lens-tissue paper, specially intended for cleaning optical glass. Use of cleaning cloth is not permitted. To remove dust, brush the glass lightly with a clean camel's-hair artist's brush, and rap the brush against a hard body in order to knock out the small particles of dust that cling to the hairs. Repeat this operation until all dust is removed.

Auxiliary Equipment

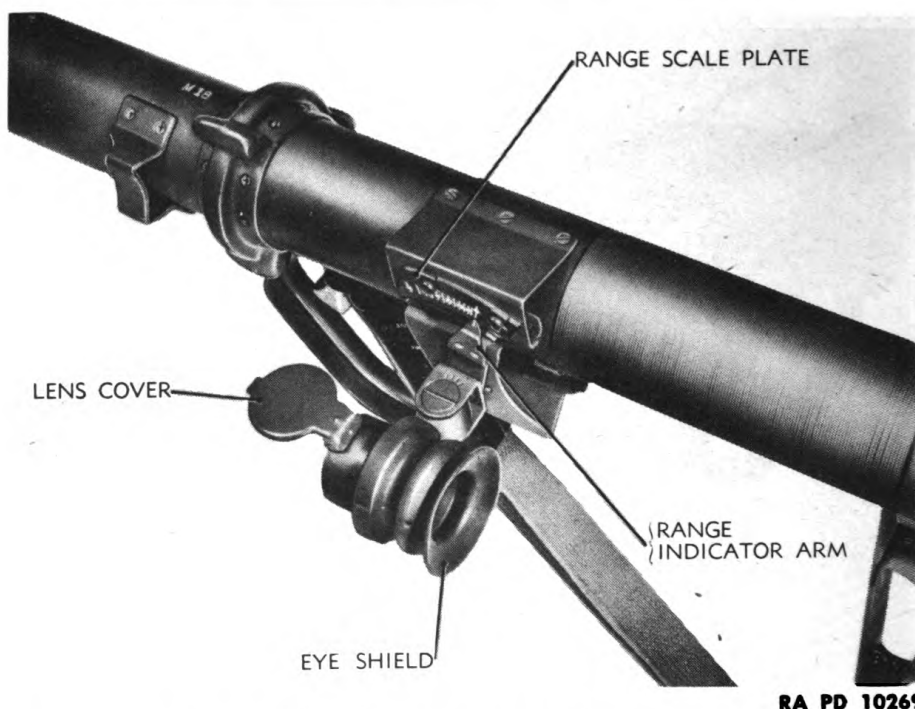
RA PD 22636

Figure 31 — Folding Bar Sight in Folded Position

RA PD 102698

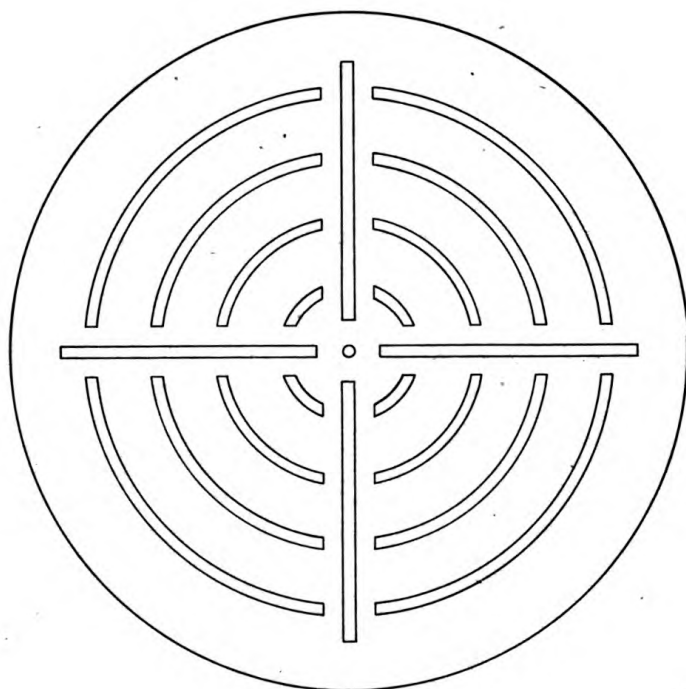
Figure 32 — Reflecting Sight Assembly in Traveling Position on Rocket Launcher M18

2.36-inch Rocket Launchers M9, M9A1, and M18



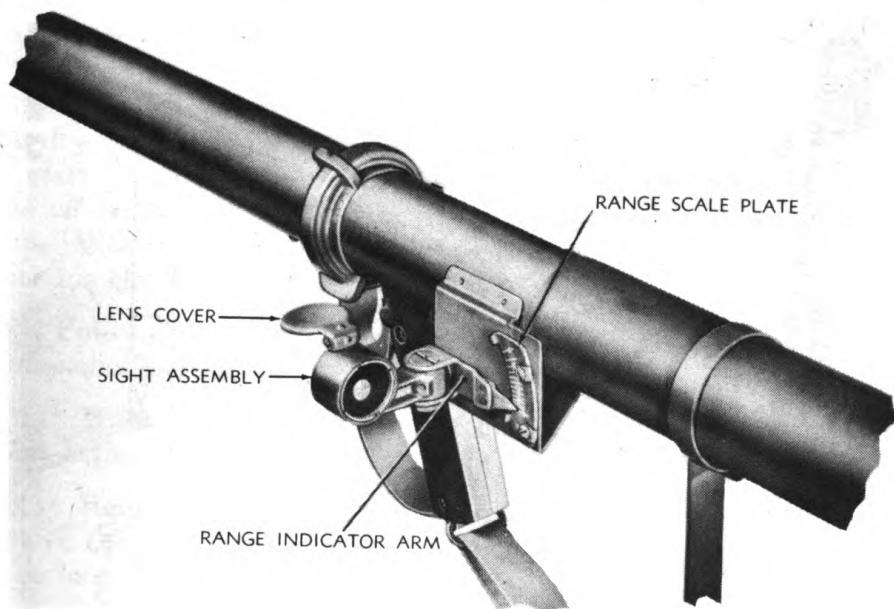
RA PD 102699

Figure 33 — Reflecting Sight Assembly in Operating Position on Rocket Launcher M18



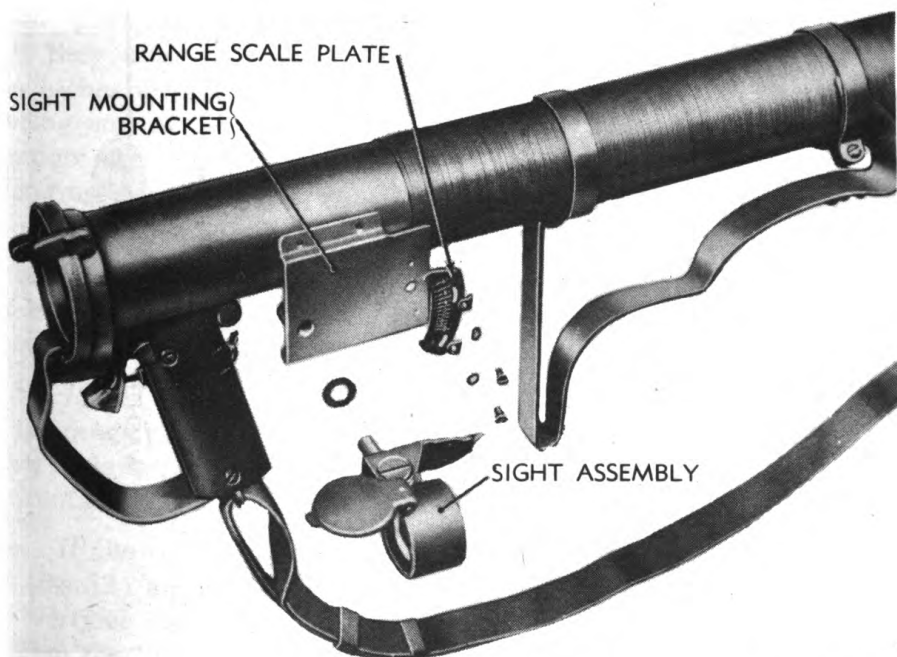
RA PD 102697

Figure 34 — Reticle for Reflecting Sight Assembly

Auxiliary Equipment

RA PD 107584

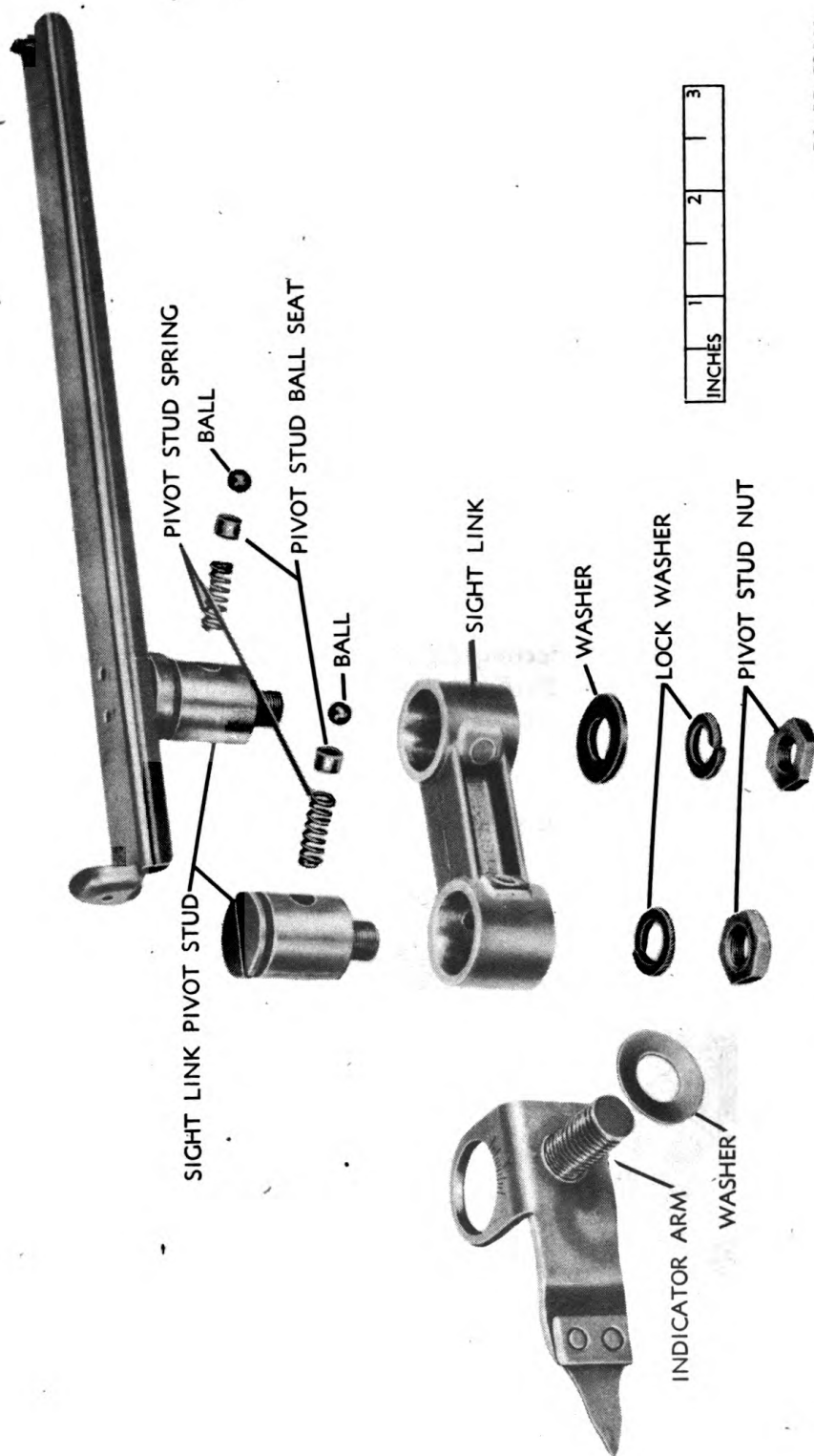
**Figure 35 — Reflecting Sight in Operating Position
on Rocket Launcher M9A1**



RA PD 107585

Figure 36 — Removal of Sight Assembly From Rocket Launcher M9A1

2.36-inch Rocket Launchers M9, M9A1, and M18



RA PD 22646

Figure 37 — Folding Bar Sight — Exploded View

Auxiliary Equipment

(4) Exercise particular care to keep optical glass free from oil and grease. Do not wipe the glass with the fingers. To remove oil and grease from optical surfaces, apply liquid lens-cleaning soap with a tuft of lens-tissue paper and wipe dry by rubbing the lens gently with dry lens-tissue paper. If this liquid is not available, breathe on the glass (provided the temperature of the air is above 32° F) and wipe off with clean lens-tissue paper. Repeat this operation until clean. When freezing temperatures prevail, use only dry lens-tissue paper for cleaning the lens.

c. **Folding bar sight.** The following instructions are for ordnance maintenance personnel:

(1) If the sight bar or the sight link is loose, it is due to a poor detent action of the stud springs which should be replaced.

(2) Remove the nuts and washers from the sight link (fig. 37). Remove the indicator arm pivot stud and the sight bar, taking care not to lose the steel balls and springs.

(3) Replace weak or broken stud springs and reassemble.

53. BORE SIGHTING.

a. The purpose of bore sighting is to test the alinement of the sight for parallelism with the bore of the launcher.

b. Place cross strings across the muzzle end of the launcher so that they cross at the center of the bore. Place a cardboard disk, 2 $\frac{3}{8}$ inches in diameter having a pin hole in the exact center, in the loading end of the launcher. Snap the reflecting sight to operating position and open the lens cover, or move the folding bar sight to operating position. Set the elevation index to "0."

c. Set the launcher in a firm position. Direct the launcher on a distant object, at least 1,000 yards distant, by sighting through the pin hole of the cardboard disk and across the intersection of the cross strings. The distant object should now be centered in the sight.

d. If the object is not vertically centered, loosen the two screws on the range plate and move the plate backward or forward (or up or down on launchers M9 and M9A1) to bring the distant object on the horizontal cross line of the sight. Tighten the two screws.

e. If the object is not laterally centered, loosen the hinge stud nut (fig. 32) and turn the stud by means of the screwdriver slot until the vertical cross line of the sight intersects the distant object. Tighten the hinge stud nut.

f. The distant object should now line up with the center of the sight cross lines.

APPENDIX

Section XVIII

SHIPMENT AND STORAGE

54. PREPARATION FOR DOMESTIC SHIPMENT.

a. **General.** Preparation for domestic shipment and limited storage (periods up to 90 days) will be the same.

b. **Cleaning.** The materiel will be thoroughly cleaned and made free of all foreign matter with dry-cleaning solvent, soap solution, or soda-ash (see TM 9-850 for cleaning methods).

c. **Lubrication.** Materiel will be lubricated in accordance with the procedure as prescribed in section X.

d. **Painting.** All painted metal surfaces that have become pitted or rusted will be thoroughly cleaned and repainted where necessary.

e. **Application of preservatives.** Preservatives will be applied immediately after cleaning and drying as a rust stain will form if materiel is handled between operations. Rust-preventive compound (light) used herein must be heated for proper consistency before application. (See TM 9-850 for methods of heating and application of rust-preventive compounds.)

(1) Swab the bore of the launcher thoroughly, using a ramrod and clean cloths soaked in heated rust-preventive compound (light). Repeat operation until all interior surfaces of the bore are thoroughly covered with a protective coating of the preservative.

(2) Apply rust-preventive compound (light) to all unprotected metal surfaces including contact springs and flash defectors.

55. CONSTRUCTION OF PACKING BOX.

a. **Style.** The shipping box described herein is a style IV nailed wood box containing six 2.36-inch AT rocket launchers M9 or M9A1. This box is suitable for both domestic and overseas shipment. **NOTE:** *The shipping box for the 2.36-inch AT rocket launcher M18 will be similar in construction. The gross weight, however, will be approximately 106 pounds.*

Appendix

b. Data.

	Inside Dimensions	Outside Dimensions
Weight (gross)	140 lb	
Length	32 $\frac{1}{4}$ in.	35 $\frac{3}{8}$ in.
Width	18 in.	19 $\frac{1}{4}$ in.
Height	22 $\frac{1}{8}$ in.	23 $\frac{3}{8}$ in.
Area	—	5.72 sq ft
Volume	—	9.2 cu ft
Ship tons	—	0.23

c. **Bill of material.** The following materials are required to construct the shipping box. If woods of groups other than those specified herein are used, the thickness of lumber will be adjusted in accordance with U. S. Army Specification No. 100-14 (latest revision), "Army-Navy General Specification for Packaging and Packing for Overseas Shipment." NOTE: *The indicating numbers are those referred to in the text and figures 38 and 39.*

BILL OF MATERIAL

INDICATING NUMBER	QUANTITY REQUIRED	PART	ACTUAL SIZE			WOOD GROUP
			Length (in.)	Width (in.)	Thickness (in.)	
1	2	End panels ¹	18	22 $\frac{1}{8}$	2 $\frac{5}{32}$	I or II
2	4	Cleats	23 $\frac{3}{8}$	2 $\frac{5}{8}$	2 $\frac{5}{32}$	I or II
3	2	Cleats	12 $\frac{3}{4}$	1 $\frac{1}{2}$	2 $\frac{5}{32}$	I or II
4	2	Side panels ¹	35 $\frac{3}{8}$	22 $\frac{1}{8}$	$\frac{5}{8}$	I or II
5	8	Battens	22	1 $\frac{1}{4}$	2 $\frac{5}{32}$	I or II
6	2	Top and bottom panels ¹	33 $\frac{13}{16}$	19 $\frac{1}{4}$	$\frac{5}{8}$	I or II
7	2	Supports ² (fig. 39)	17 $\frac{15}{16}$	6 $\frac{1}{8}$	$\frac{5}{8}$	Plywood
8	4	Separators ² (fig. 39)	17 $\frac{15}{16}$	7 $\frac{5}{8}$	$\frac{5}{8}$	Plywood
9	2	Hold-down braces ² (fig. 39)	17 $\frac{15}{16}$	2 $\frac{7}{8}$	$\frac{5}{8}$	Plywood
10	2	End pads (corrugated fiberboard)	17 $\frac{7}{8}$	22	—	—
11	—	Cushioning material	260	3	$\frac{1}{8}$	—
—	2	Steel straps ³	90	$\frac{1}{2}$	0.020	—
—	2	Strap seals	—	$\frac{1}{2}$	—	—
—	0.28 lb	Fivepenny box nails	—	—	—	—
—	0.14 lb	Sevenpenny cement-coated nails	—	—	—	—
—	0.37 lb	Eightpenny cement-coated nails	—	—	—	—
—	0.04 lb	$\frac{1}{2}$ x $\frac{1}{2}$ -inch cement-coated staples	—	—	—	—

¹Ends, sides, top, and bottom may be made of several pieces, one piece for each 3 inches of width, but no piece will be less than 2 $\frac{1}{2}$ inches wide.

²The dimensions of the blocking used in this box may be varied to accommodate different kinds of wrapping or cushioning material.

³Equivalent steel wire may be used.

2.36-inch Rocket Launchers M9, M9A1, and M18

d. **Nailing schedule.** All nailing specified herein is for group I woods only. If woods of other groups are used, nailing schedule must be adjusted in accordance with U. S. Army Specification No. 100-14 (latest revision), "Army-Navy General Specification for Packaging and Packing for Overseas Shipment."

NAILING SCHEDULE

FASTEN		NAIL SIZE AND TYPE	MAXIMUM SPACING (inches)	NOTES
Part	To Part			
Cleats (2) and (3)	Ends (1)	Fivepenny box	2	Stagger and clinch
Sides (4)	Battens (5)	Fivepenny box	2	Stagger and clinch
Sides (4)	Ends (1) and cleats (2)	Eightpenny cement-coated	2¼	Stagger
Top and bottom (6)	Ends (1)	Eightpenny cement-coated	2½	—
Top and bottom (6)	Sides (4)	Sevenpenny cement-coated	6-8	—

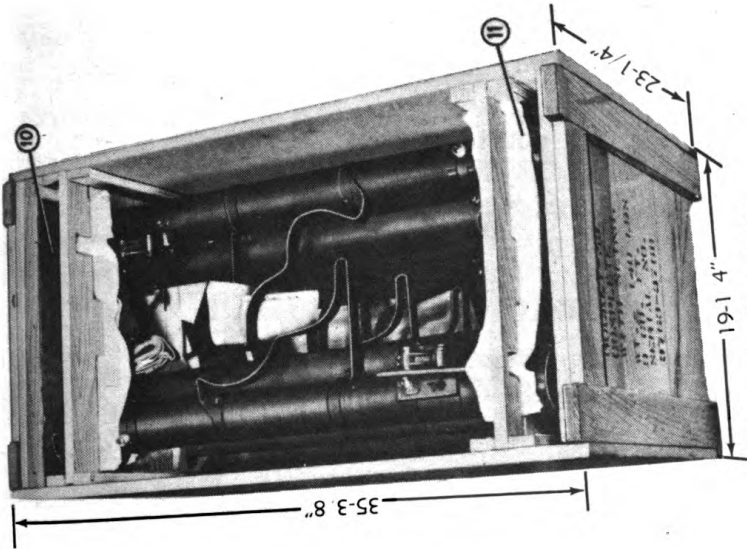
e. **Waterproof paper.** Waterproof paper liner for this container will not be necessary as the contents are adequately protected.

56. PACKING PROCEDURE.

NOTE: *Cushioning material (11) such as creped cellulose, wadding, felt, and so forth, will be placed between all blocking and launchers to prevent abrasion (fig. 38).*

- a. Place one pad (10) against each end of the box.
- b. Place supports (7) in the grooves between battens (5).
- c. Position one launcher in the notches of supports (7) with the sight up, and with the stock towards the center of the box.
- d. Position another launcher, reversed end for end in relation to the first launcher, in the other notches of supports (7) with the stock towards the center of the box.
- e. Place one set of separators (8) in the grooves between battens (5) on top of the launchers.
- f. Position two more launchers in the notches of separators (8) in the same relative position as the first two launchers.
- g. Place the other set of separators (8) in the grooves between battens (5) on top of the third and fourth launchers.
- h. Position two more launchers in the notches of separators (8) in the same relative position as the preceding launchers.
- i. Place hold-down braces (9) in the grooves between battens (5) on top of the launchers, as shown in figure 38.

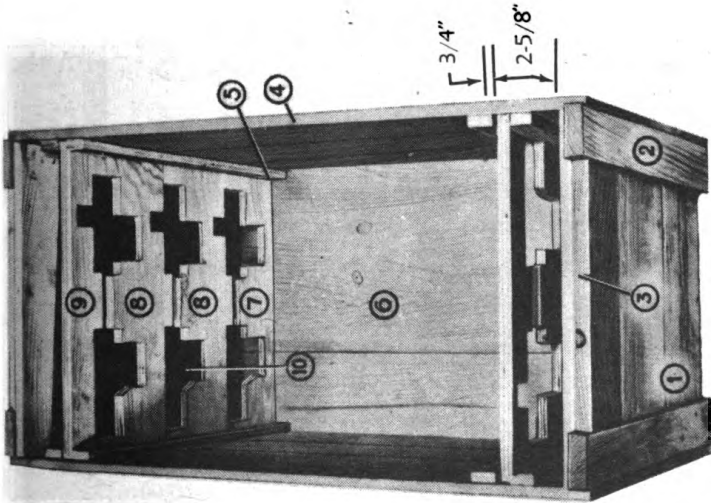
Appendix



METHOD OF PACKING
LAUNCHERS IN BOX
NOTE — NUMBERS IN CIRCLES CORRESPOND TO THE INDICATING
NUMBERS LISTED IN THE BILL OF MATERIAL.

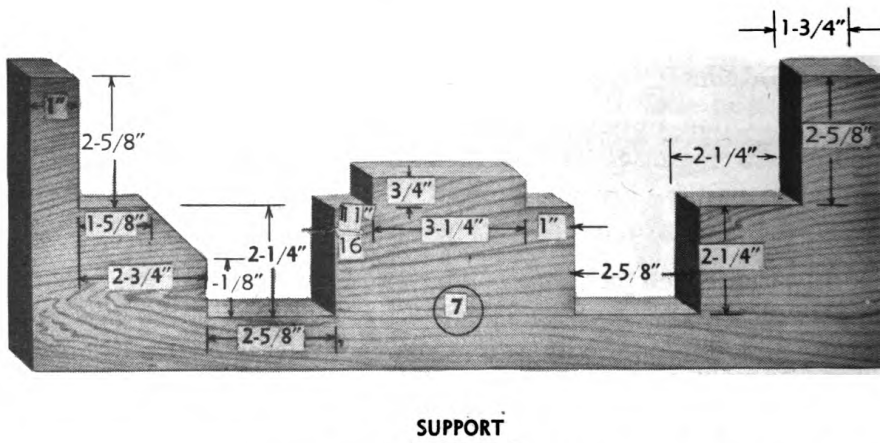
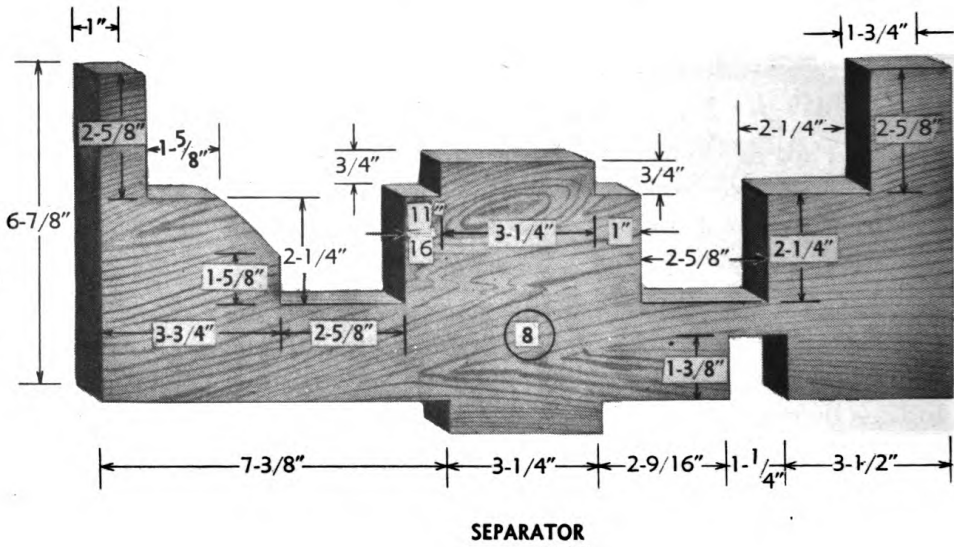
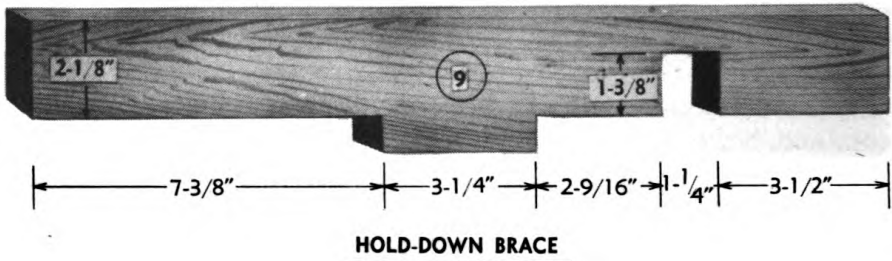
RA PD 102965

Figure 38 — Packing Box for Six 2.36-inch AT Rocket Launchers M9 or M9A1



INSIDE VIEW OF BOX
SHOWING THE STRUCTURE
OF THE INTERNAL BRACING

2.36-inch Rocket Launchers M9, M9A1, and M18



NOTE — NUMBERS IN CIRCLES CORRESPOND TO THE INDICATING NUMBERS LISTED IN THE BILL OF MATERIAL.

RA PD 102966

Figure 39 – Details of Internal Bracing for 2.36-inch AT Rocket Launcher M9 or M9A1 Packing Box

Appendix

57. STRAPPING AND MARKING.**a. Strapping.**

(1) After closing the box, place two steel straps around the sides, top, and bottom, spaced 4½ inches from each end of the box.

(2) Each strap will be stapled to the sides, top, and bottom of the box.

b. Marking. Box will be marked for shipment in accordance with TM 9-2854, "Instruction Guide — Ordnance Packaging and Shipping (Posts, Camps, and Stations)."

58. LIMITED STORAGE INSTRUCTIONS.

a. General. When the materiel is out of use, it must be turned over to ordnance personnel for storage or may be placed in limited storage status for periods not to exceed 90 days. *NOTE: Storage of materiel for periods in excess of 90 days will normally be handled by ordnance personnel only.*

b. Preparation. The launchers will be prepared and packed for limited storage in the same manner as prescribed in paragraphs 54 and 56 before being stored.

c. Inspection.

(1) Before placing materiel in storage, a systematic inspection must be made and all missing or broken parts must be replaced or repaired. If repairs cannot be made prior to placing materiel in storage, a tag will be attached to the materiel specifying the repairs needed, and a written report of these items will be made to the officer in charge of the materiel.

(2) Upon removal from storage, any items noted by a tag attached to materiel as still needing repairs must be repaired and materiel will be given a complete maintenance inspection plus any repairs which are indicated by this inspection.

d. Preferred storage. The preferred storage for this type of materiel will be in closed, dry warehouses or sheds. If storage is permitted outdoors, cover materiel completely with tarpaulins, and refer to War Department Supply Bulletin 9-47, "Protection of Ordnance Materiel in Open Storage," dated 21 February 1945.

Section XIX

REFERENCES

59. PUBLICATIONS INDEXES. The following publications indexes should be consulted frequently for latest changes or revisions of references given in this section and for new publications relating to materiel covered in this manual.

- a. Ordnance Supply Catalog Index..... ASF Cat ORD 2
- b. Ordnance Major Items and Combinations, and
Pertinent Publications SB 9-1
- c. List and Index of War Department Publica-
tions FM 21-6
- d. List of War Department Films, Film Strips
and Recognition Film Slides..... FM 21-7
- e. Military Training Aids FM 21-8

60. STANDARD NOMENCLATURE LISTS.

- a. Cleaning, preserving and lubricating materials;
recoil fluids, special oils, and miscellaneous
related items ASF Cat ORD 5 SNL K-1
- b. Launcher, rocket, 2.36-inch, M9, M9A1, M18
ASF Cat ORD 7, 8, and 9 SNL B-41
- c. Rockets, all types and components
ASF Cat ORD 11 SNL S-9
- d. Obsolete and nonstandard bombs, grenades,
pyrotechnics and rockets.... ASF Cat ORD 11 SNL S-10
- e. Soldering, brazing and welding materials, gases
and related items..... ASF Cat ORD 5 SNL K-2
- f. Tools, maintenance, for repair of small and
hand arms, and pyrotechnic projectors
ASF Cat ORD 6 SNL B-20
- g. Truck, 2½ ton, 6 x 6, small arms repair, M7A1
and M7A2 ASF Cat ORD 7 SNL G-138

Appendix

61. EXPLANATORY PUBLICATIONS.**a. Ammunition.**

Ammunition, General	TM 9-1900
Ammunition, Identification Code	SB 9-AMM 5
Hand and Rifle Grenades, Rocket, AT, HE, 2.36-inch	FM 23-30
Rockets	TM 9-1950
Targets, Target Material, and Training Course Layouts	TM 9-855
Unsafe Ammunition	SB 9-AMM 2

b. Care and preservation.

Basic Maintenance Manual	TM 37-250
Cleaning, Preserving, Sealing, Lubricating and Related Materials Issued for Ordnance Ma- teriel	TM 9-850
Decontamination	TM 3-220
Defense Against Chemical Attack	FM 21-40
Inspection of Ordnance Materiel	TM 9-1100
Military Chemistry and Chemical Agents	TM 3-215

c. Dictionary of United States Army Terms..... TM 20-205**d. Qualification in Arms and Ammunition Train-
ing Allowances AR 775-10****e. Range Regulations for Firing Ammunition for
Training and Target Practice..... AR 750-10****f. Storage and shipment.**

Instruction Guide: Ordnance Packaging and Shipping (Posts, Camps, and Stations)	TM 9-2854
Ordnance Storage and Shipment Charts	SB 9-OSSC-B
Protection of Ordnance Materiel in Open Storage	SB 9-47

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